

STATISTICAL,
DESCRIPTIVE AND HISTORICAL ACCOUNT

OF THE

NORTH-WESTERN PROVINCES OF INDIA.

PREPARED, UNDER ORDERS OF THE GOVT. OF INDIA,

BY

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BENGAL CIVIL SERVICE.

VOL. II.

MEERUT DIVISION:
PART I.



ALLAHABAD:

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PREFACE.

THE preface to the first volume sufficiently explains the origin and object of the present work. Since its publication the position of the Gazetteer has been defined by a Resolution of the Government of these Provinces (No. 724A., dated April 21st, 1875), which runs as follows :—

READ—

- (1.) Resolution, Government, North-Western Provinces, No. 2799, dated 23rd June, 1868, laying down a scheme for District Memoirs.
- (2.) Report of Officer in charge of the Provincial Gazetteer, No. 1569, dated 29th June, 1874.
- (3.) Memorandum by Mr. Atkinson on the difference between the Gazetteer and the District Memoir.
- (4.) The first volume of the Gazetteer (Bundelkhand).

OBSERVATIONS.—The general design of the Gazetteer, as originally intended, can be gathered from the series of queries issued with the authority of this Government in 1871, and those subsequently circulated by the Government of India for the guidance of Editors of Gazetteers. In those Provinces, however, the common plan has been somewhat modified by the adoption of a scheme for the preparation of District Memoirs; and in consequence of this arrangement the Editor of the Gazetteer has not hitherto dwelt on certain classes of subjects which, had it not been intended that they should have formed the main portion of the District Memoir, would have been treated more at length. The first volume of the Gazetteer is thus in some respects incomplete. The plan of a series of District Memoirs, originated by Mr. Thomason, and revived by Sir William Muir, is unquestionably good, but from various causes, and chiefly from the want of leisure on the part of officers competent to undertake the work, the District Memoir scheme has not succeeded. Memoirs have as yet been completed for only three out of the thirty-five districts in those Provinces, and His Honor sees no reason for believing that in future the progress will be greater. He is thus led to consider whether the restrictions as to form and character imposed on the Gazetteer should be maintained.

In view of the training and experience of the present Editor, the Lieutenant-Governor thinks it desirable that the Gazetteer should be more complete in itself, and that the gaps caused by the non-existence of the Memoirs should in future be supplied. The Editor should collect and exhibit all information on public affairs on the points noted in paragraphs 2 to 13 of his memorandum dated November 2nd, 1874, which it may be considered expedient to publish, and should include it in the Gazetteer, whether the information forms a portion of the plan of the District Memoir or not. The work will thus aim at a position differing from and somewhat higher than that of ordinary Gazetteers. It will be complete in itself, and contain an account of all matters of interest connected with each district, or, at least, where a detailed description is not considered necessary, a reference to them.

Whilst signifying approval of the scheme sketched out in the memorandum drawn up by Mr. Atkinson, with the modifications necessary in view of the slow progress of the District Memoirs, His Honor desires his attention to the following instructions. The arrangement adopted in distributing the information in the Gazetteer is approved of, and should be adhered to for every district. As to settlement reports, rent-rate reports, and the like, as a rule it will be sufficient to give the results only of the settlement operations and a short sketch of the fiscal history, omitting details of a purely executive character, such as the reasons for adopting certain

classifications of soils in particular localities, the details of the survey demarcation of boundaries, preparation of records, distribution of judicial work, adjustment of circle rates and rent-rates, and other similar matters. At the same time, where possible, a description and history of each fiscal subdivision should be given, sufficient to place officers new to the district charge in possession of such general knowledge of the physical capabilities of the tract, its fiscal history and its inhabitants, as may enable them at once to exercise an intelligent control over its administration. The labour necessary to procure a correct balance-sheet of each fiscal subdivision, from the conquest or cession, would be very great; and as the information, when obtained, is more curious than useful, its compilation need not be attempted. Changes in the Judicial, Magisterial, and Revenue jurisdictions, lists of district officers, lists of villages and their assessment, the reproduction of settlement reports, and other similar matters involving much original research, and the preparation of large tabular statements cannot be attempted with the present establishment. Matters of Imperial policy will not be discussed, the Gazetteer being confined to the record of facts. It is difficult to lay down a hard and fast rule as to what shall be excluded, and in this matter great discretion must be allowed to the Editor, who will, as directed, submit the proofs before final printing for the approval of this Government.

With these remarks the Lieutenant-Governor leaves the work in Mr. Atkinson's hands, with the assurance that no avoidable delay will be allowed in its completion.

The system of transliteration followed is that laid down in the *North-Western Provinces Gazette* for October 3, 1874 (pages 1732-33), and for convenience of reference is reproduced here:—

RULES FOR TRANSLITERATION.

Every letter in the vernacular must be uniformly represented by a certain letter in the Roman character as follows:—

Vowels.

PERSIAN.		DEVANAGARI.		ROMAN.	PRONUNCIATION.
Initial.	Non-initial.	Initial.	Non-initial.		
ا	(zabar)	अ	not expressed.	a	As in woman.
آ	ا	आ	।	á	„ father.
اِ	(zer)	इ	।	i	„ bit.
اِی	or ے	ई	।	í	„ machine.
اُ	(pesh)	उ	।	u	„ pull.
اُو	و	ऊ	।	ú	„ rude.
اِی	or ے	ए	।	e	„ grey.
اِی	or ے	ऐ	।	ai	„ aisle.
اِ	و	ओ	।	o	„ hole.
اِ	و	औ	।	au	As ou in house (nearly, being a combination of the a and u above.

Consonants.

PERSIAN.	DEVANAGARI.	ROMAN.
ب	ब	b
भ	भ	bh
च	च	ch
छ	छ	chh
د or ذ	द or ढ	d
ध or دھ	ध or ढ	dh
ف	wanting	f
گ	ग	g
घ or غ	घ	gh
ج	ज	j
क or ق	झ	jh
ख or خ	क	k
—	ख	kh
ل	च	ksh
م	ल	l
ن	म	m
پ	न, ञ, ङ, ण or anuswara	n
फ	प	p
ر or ر	फ	ph
ڑ	र or ॠ	r
ص or س, ث	ॡ	rh
ش	स	s
ط or ت, ث	श or ष	sh
ث or ث	त or ट	t
ذ	थ or ठ	th
ز	व	w or v
ح or ض, ز, ذ	य	y
ذ	wanting	z
ع	ditto	zh
—	ditto	omitted, the accompanying vowel only being expressed.
—	ज्ञ	gy

In the present volume my acknowledgments are due to Mr. G. R. Williams, C.S., for notes on the Sahāranpur District. For the Aligarh District I have depended almost entirely on the statistics given by Mr. Hutchinson for the pre-mutiny period, and on Mr. W. H. Smith's valuable reports for the period since the mutiny. Without Mr. Smith's assistance I should not have been able to give so complete an account of the Aligarh District as I have attempted. Mr. Smith, too, kindly examined the sheets relating to Aligarh whilst passing through the Press, and similar service has been rendered me for Sahāranpur by Mr. E. G. Jenkinson, C.S. Throughout I have consulted with much advantage the valuable records of the Board of Revenue, the numerous settlement reports, and the records of the Government Secretariat. I cannot do better than quote here the remarks of the late Mr. G. Edmonstone whilst engaged on a similar work:—

“It is, I believe, generally allowed that there are few undertakings more difficult of successful accomplishment than the detailed account of a tract of country, a description of its natural resources, of the improvements which art and civilization have introduced, and the further amelioration of which it is capable; of the extent and nature of its population, and, in short, of all the points which have any relation to agricultural prosperity. Although I have endeavoured to place such a picture before you, I cannot flatter myself that I have succeeded, and I shall only be too happy if my labours meet with the indulgent consideration which the zeal and perseverance with which they have been prosecuted deserve.” If my progress has been slow, it has been due to no fault of mine, for the care and labour required in verifying and collecting even the statistics of the present volume have been such as to take up a great portion of my time. As it is, however, I trust that the labour has not been lost, and that the present volume will be found to contain an accurate and full account as far as my materials would allow, of the various subjects it professes to treat of. I have not ventured to recompile authorised statistics such as those relating to the census, settlements, the collection of the land-revenue, excise, stamps, and education, and give them as I find them on the authority of the departments concerned.

NAINI TAL :
The 1st July, 1875. }

E. T. ATKINSON.

STATISTICAL AND DESCRIPTIVE ACCOUNT OF THE NORTH-WESTERN PROVINCES.

MEERUT DIVISION.

INTRODUCTION.

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PART I.

THE MEERUT DIVISION proper comprises the Districts of Dehra Dún, Saháranpur, Muzaffarnagar, Meerut, Bulandshahr, and Aligarh, but for the purposes of this notice the Dehra Dún District is omitted, as its description comes more correctly into the volume devoted to the hill districts. The Meerut Division, as thus restricted, occupies the upper portion of the Duáb between north latitude 27°-29'-0" and 30°-21'-30", and east longitude 77°-3'-45" and 78°-42'-30". It is bounded on the north by the Siwálik (Shiwálak) hills; on the south by the Muttra and Eta Districts of the Agra Division; on the east by the Ganges; and on the west by the Jumna. The area in 1872 comprised 10,110 square miles and 308 acres, occupied by 7,508 villages. The population during the same year numbered 4,860,228 souls, of whom 3,810,321 were Hindús, 1,045,780 were Musalmáns, and 1,378 were Christians and others neither Hindu nor Musalmán. The Hindús comprise about 78 per cent. of the total population, the provincial percentage being 86·3 per cent. The Meerut Division has, next to Rohilkhand, a greater number and proportion of Muhammadan inhabitants than any other division in these provinces.

The Ganges and the Jumna, which include between them the Duáb, issue from the Siwálik hills in nearly the same latitude, and flow southwards in an almost parallel line. For a short distance after leaving the hills they traverse a formation of boulders superposed on shingle which extends as the gradual denudation of the hills is effected. The boulder beds of the rivers sustain with impunity the great velocity which is a natural result of the considerable fall of the country close to the hills: but when the line of boulder formation is passed, some eight or ten miles below the foot of the hills, they enter on a sandy soil no longer able to withstand a rapid current. The consequence of this is, that the rivers hitherto flowing in channels of moderate width expand into broad valleys, which they have worn out for themselves in the friable soil that they here encounter. Within the limits of these valleys, the great rivers adopt an ever-varying course, and within a few miles after leaving the boulder formation, the surface of the water in these rivers is found to be as much as sixty feet below the level of the country, and this difference in level is maintained until the united streams of the Ganges and the Jumna pass out of these provinces in their progress to the sea. The alluvial lands which are formed in the wide valleys or troughs of the rivers are called the *khádir* of those rivers, and the high and dry plateau of the Duáb which lies between them is called the *bángar* or uplands. The declivity of the country rapidly decreases as the distance from the Himálayas becomes greater. Percolation on a vast scale is continually at work in the shingle and boulder portions of the courses of the rivers, and it is observed that the river Jumna in the latitude of Saháranpur is only fordable at favourable points, even when embankments are made quite across the river near Faizabad, just below the Siwálik gorge, for the purpose of diverting the whole of the available supply of the river into the Eastern and Western Jumna Canals. The great central plateau or uplands touches the hills near the Sháhjahánpur pass to the north of the Saháranpur District. From this point, a well-defined bank runs south-east to the high bank of the Ganges, which it joins near Bhúkarheri in the Muzaffarnagar District, and this high bank thence throughout the Duáb forms the eastern boundary of the central plateau. The western boundary of the uplands runs close to the bed of the Jumna river. The lowlands or *khádir* here are much narrower than they are on the east, and seldom average more than four miles in width. The soil in these uplands, close to the hills, consists of a clay of a dark chocolate colour, producing fair crops in years of ordinary moisture. Further south loam and sand or sand alone predominates.

The central plateau is drained by the Hindan and its tributaries, which eventually flow into the Jumna, and the East Káli Nádí and its tributaries, which join the Ganges. The Hindan rises in the north of the Saháranpur District, and flowing southwards, receives on the left bank the West Káli Nádí at Rauli, in Parganah Burhána of

General appearance.

Drainage lines.

the Muzaffarnagar District; and further south, on the right bank, the Karsuni or Krishni Nadi at Barnawa, in the Meerut District. Thence it bends to the west, and after a total course of 108 miles falls into the Jumna in Pargannah Loni of the same district. Both the Karsuni and the West Káli Nadi take their rise in the Saháranpur District, and themselves receive the waters of numerous drainage lines. To the east of the Ganges Canal the head-waters of the East Káli Nadi collect in the Muzaffarnagar District, and, uniting further south, flow in a well-defined channel through the District of Bulandshahr, and join the Ganges near Kanauj in the Farrukhabad District. The Sengar rises in the Aligarh District, and flowing southwards joins the Jumna. Besides these main drainage lines of the central plateau there are numerous water-courses, which either join the larger streams, or make a way for themselves into the depressions occupied by the great rivers which form the main arterial lines of drainage. Such are the Kátha, which rises in the Saháranpur District, between the Krishni and the Jumna, and after a course of 32 miles joins the latter river near Kairána, in the Muzaffarnagar District; the Síla Khála, an important drainage line of the Saháranpur District, joins the West Káli Nadi; the Nim and Chhoiya, lines of drainages which collect together in a defined channel in the Bulandshahr District and join the East Káli Nadi south of Aligarh. The Karon, also rising in the same district, flows through Aligarh and Muttra, and joins the Jumna in the Agra District. These streams are described at length in the notices of the districts through which they flow.

CANALS.

The most important feature in the Upper Duáb is the great canal system which has its origin there, and sends out its fertilising streams in every direction. There are two main canals, the Eastern Jumna Canal, which waters the western portions of the Saháranpur, Muzaffarnagar, and Meerut Districts, and the Ganges Canal, of which the main branch, starting from Hardwár at the foot of the Siwálíks, terminates at Cawnpore in the Ganges, and a second branch runs, known as the Etáwa branch, and joins the Jumna. The general history of these canals, as a whole, will be noticed here, reserving the local description and details for the district notices.¹

The failure from time to time of the periodical rains, and the arid nature of the climate of these provinces during some months of the year, has rendered the practice of artificial irrigation a necessity from the earliest ages, and each section of the country possesses its own primitive, and often ingenious, method for raising water for this purpose. In a small portion of Bundelkhand² a few large reservoirs of water were formed by damming up the narrow outlets of the valleys. These works, after

¹ The authorities for this portion of the work are the annual Irrigation Reports; the Ganges Canal, by Sir Proby T. Cautley: London, 1860; Notes on the Eastern Jumna Canal Levels; and the records of the Board of Revenue of these Provinces. ² Gazetteer, I, 147

the lapse of seven to nine centuries, still exist as monuments of the energy and skill of their constructors. Throughout the Tarāi, Bareilly, Sháhjahánpur, and Gorakhpur Districts, permanent dams were not attempted, but an indifferent substitute was found in the use of temporary dams thrown across the numerous small perennial streams which intersect those districts, whereby the drainage of the country was impeded and the malarious character of the climate of those districts was very much intensified. In the Duáb and the Benares Division irrigation was effected partly from natural reservoirs known as *jhils*, and formed in the shallow depressions which abound there, and partly from wells.

All these methods, however, were strictly local in their influence, and the sources on which they depended for their supply of water were generally limited, and liable to total failure in seasons of drought, just when their assistance was most urgently needed, and they have ever proved insufficient to guard the country against the inroads of famine. The absence of a strong central authority, and the parcelling out of the country amongst tribes and clans hostile to each other by religion, birth or tradition, have ever prevented any combined efforts of the people and the Government in carrying out extended schemes of irrigation. Here and there some local governor has made his name remembered by some attempts to provide water for the people of the town in which he resided; but, with the exception of the canals known as those of Ali Mardán Khán, which have been utilised for portions of the course of the Eastern Jumna Canal, and the Abáí Nálá line of drainage in the Meerut District, no remains have come down to us that have been designed to provide for more than the wants of a very limited local area. At present there are seven canal systems at work in these provinces: the great Ganges Canal, opened in 1851; the Eastern Jumna Canal, opened in 1830; the canals of Dehra Dún, commenced in 1837; the Rohilkhand Canals, opened at various times since 1854; the small canals of the Bijnaur District; the Agra Canal, opened in 1874; and the Bundelkhand Irrigation Works of the Hamírpur and Jhansi Districts. The works in progress are the Lower Ganges Canal, intended to water the country between the East Kálí Nadi and the Ganges, several projects of irrigation from small rivers in the north of the Bareilly District, and the Bundelkhand works, for utilising the waters of the Ken, Betwa, and Dhasán.

Each of these canals will be described in the volume to which the districts within which it is situated belong. In the present volume I take up the Eastern Jumna Canal and the Ganges Canal, each as a whole, reserving the district details for the district notices.

The original lines of the Eastern Jumna Canal¹ were laid by the celebrated
Canal of Ali Mardán Khán. Ali Mardán Khán in the reign of Shahjahán. The
 excessive slope of the country between the Naugang and

¹For a full description of each work on this canal see Captain P. T. Cautley's report: Calcutta, 1845; and Colonel Morton's Notes: Agra, 1852.

Maskara rivers, which would have led to a retrogression of levels fatal to the direction which the former stream now holds, shows that at no time could this canal have contained much water, whilst the absence of distributary channels shows that it afforded little or no irrigation. It would appear that the difficulty caused by the torrents crossed in its course led to the project being abandoned. It is said that the water, at one time, travelled as far as Ranap, a royal hunting preserve on the left bank of the Jumna, nearly opposite Delhi; and the old hunting seat of Bádsháh Mahál, situated in the forests north of Nayashahr, was undoubtedly built either on an old branch of the Jumna, through which the canal stream was brought, or on an excavated channel made for the purposes of the canal. Zábíta Khán, too, succeeded in bringing a stream of water from the Jumna to Ghausgarh, one of his fortified posts in Parganah Thána Bhawan of the Muzaffarnagar District. Tradition has it that in doing so great loss was occasioned to the towns of Bahat and Saháranpur.

Another canal project executed by the native Government was that known as the Abú Nála, or canal of Muhammad Abú Khán, the remains of which still exist in the vicinity of Meerut.

Other canals.

It consisted of a cut made from the West Kálí Nadí, near the village of Rámpur, to the head of a small tributary of the East Kálí Nadí, called the Khodara Nálá, which rises near the village of Daurála. The length of this cut did not exceed $12\frac{1}{2}$ miles, and its width, judging from the present remains, could not have exceeded 15 feet. The water after reaching Daurála must have passed down the Khodara Nálá to Meerut to irrigate the gardens and orchards around the town. There is no tradition of it as a running stream, though for a season it must have had a supply of water. The bed of the canal was formed by throwing an embankment across the head of the West Kálí Nadí, which checked the floods in the river, and must have given rise to extensive inundations. For these reasons, and the difficulties encountered in keeping the bed clear of silt, the project was abandoned. The present Ganges Canal crosses the Abú Nálá near Jawálágarh, and that portion of the nálá which approaches the canal from the West Kálí Nadí is now converted into an escape for throwing the waste water from the canal into the valley of the river. A similar work was executed by Ghulám Kádir by means of an embankment thrown across the Karsuni or Krishnī, which runs westward and parallel to West Kálí Nadí, close by the towns of Jalálabad and Thána Bhawan. Captain Debude, in 1825, proposed to carry out the original design of Muhammad Abú's canal, but the project was found to be unsuited for the objects proposed.

EASTERN JUMNA CANAL.

During the short period of thirty-five years in the beginning of the present century no less than eight famines occurred; the evident failure of all the ordinary sources and methods

Eastern Jumna Canal.

of irrigation gave rise to the conviction that more extended schemes were required, and during this period the foundations were laid of the system of canals, by which in the course of a few years almost the entire area of the North-Western Provinces will be commanded. In 1809, on the 7th of October, the first step was taken by the British Government towards this object. The Board of Commissioners, actuated probably by the disastrous results of the famine of 1803-04, one of the severest on record in the annals of these provinces, recommended that a survey should be undertaken of the Duáb Canal line, now known as the Eastern Jumna Canal, and Lieutenant Todd, of the Bengal Army, was deputed to the work. Lieutenant Todd followed a line taken by Colonel Kyd in the early part of the same year, and appears to have completed his survey in the following year, 1810; but the passing interest in the subject had been replaced by State considerations of even more pressing urgency. Years passed by in inaction. The terrible famine in Agra, Cawnpore, and Bundelkhand in 1813-14 failed to induce any exertions beyond the deputation of Major Hodgson, who minutely examined the line between Saháranpur and the Jumna; and the great scarcity which prevailed in 1819 throughout the lower districts of the Duáb passed by, without any further steps towards the security of the harvests being carried out.

Three years later the subject was again brought forward, and in 1822 Lieutenant Debude, of the Engineers, was appointed to survey and report upon the practicability of re-opening the Duáb Canal. In 1823, Captain R. Smith, of the same corps, was appointed Superintendent, and drew up a rough estimate of the cost of opening the whole line from a proposed new head near Faizabad to its re-union with the Jumna near Loni, amounting to Rs. 2,03,633. Excavation was commenced at the close of 1823. The line taken up by Ali Marán Khán, the original projector of the canal, passed centrally over the high land between the Hindan and its tributaries and the Jumna, and showed much skill in selecting a course most favourable to the purposes of irrigation. The head was most probably taken from Khara opposite Kalesar; the canal flowed thence through the Bádsháh Mahál by Arípur to Fatehpur, and entering the bed of the Budhi Jumna above Tándá, followed this bed to Nayashahr. From this point there is a cut to the Raipur river, down the course of which the stream was carried for two miles. Thence it crossed south-east over the high land, passing the Játón-wála drainage line and Naugang river, beyond which, at the distance of half a mile, it terminated in a depression known as the Bahat Khála. Along this the canal took its course to its junction with the Maskara, in which it ran for 4,000 feet to the village of Kalsiya. Here the excavation commenced again upon high land passing to the west of Saháranpur, and terminating at the head of the Shánli Nála, immediately north of the village of Abba. It followed this

nála for twenty-four miles to Bhainswál, where the excavation took a southerly direction, passing west of Shámli, east of Kándhla, and west of Baraut. After passing Baraut the line inclined south-east to Deola, and about twelve miles below the canal terminated in the Sikráni Nálá, down which it was conducted to Ranap and the Jumna.

Captain Smith followed the same line, but made its head much further south, between Fatehpur and Tándá, known as the Faizabad head; and instead of allowing the Sikráni to carry off all the water, turned it into an escape, making a short canal between Gokalpur and Salámpur the main outlet. Cuts were also made to form an escape for the waters of the Maskara during time of flood. The year 1824-25 was one of famine in the Upper Duáb, and in the following year scarcity was general throughout these provinces. The works were in the meantime pushed on as rapidly as the limited means at the disposal of the engineers would allow, and the canal was opened in January, 1830. Captain P. T. Cautley was appointed to succeed Colonel Smith during the same year. In 1834 it was found necessary to utilise the old Khara head as well, and some slight alterations brought it into use as an alternative source of supply. Numerous works, rendered necessary by the actual experience of the water requirements of the districts through which the canal passed, were subsequently undertaken, and roads, bridges, and embankments were constructed. One feature of this canal, afterwards adopted on the Ganges Canal, was the formation of large plantations of *sál*, *sisú*, teak, and *tún*. Numerous *chaunkís* (or rest-houses for the establishment) were also built. But all these matters, though increasing the cost of construction, were found, on the whole, to result in a very moderate outlay, when compared with the advantages derived from the canal, both in insuring a crop in seasons of drought, as well as in inducing the people to bring under cultivation the lands hitherto lying waste for want of water.

The bed of the canal from the Jumna head to a point opposite Alampur, on the Raipur Nálá, is composed of shingle or stone boulders decreasing in size on the approach to Alampur. From Alampur to Sarkari it consists of sand, with beds of clay here and there, but the sand predominates. From Sarkari to Jauli, clay in some places mixes with the kunkur, and from there to the tail of the canal at Salámpur the bed is sand. On the sandy sections of the canal erosion early set in, owing to the rapid fall in level, and rapids were formed which destroyed several bridges. Those difficulties were got over by the construction of falls at Belka, Randaul, and Gúna in the first place, where the injury was most felt, and subsequently at Nagla, Babail, Suknlpur, Jauli, Salámpur, Sikráni, Sarkari, Halálpur, Mekchhapár, Ríri, and Bálpur. In 1852 Colonel Morton carried out the suggestions of Captain Cautley by constructing other falls and cuts, which materially improved the position of the canal

as a means of irrigation, not of inundation, as it had on several occasions come to be. He also abandoned the tortuous course of the canal along the Shānli Nālī between Bālpur and Bhainswāl, giving a perfectly straight line between Bālpur and the outlet, and thus saved the cost of maintaining 7½ miles.

The circumstance of the canal lying at right angles to the line of drainage running across the Maskara, Naugang, and Jātonwāla torrents from west to east, was taken advantage of to relieve the dam at Kalsiya, by leading the surplus waters of the Maskara into the Chaicha, Nāgūdeo and Dumanla, the three eastern leads of the Hindan. The result of this was to reduce the Maskara at its contact with the dam at Kalsiya to a moderate torrent. Similarly, the Jātonwāla drainage was turned into the Naugang stream, which was frequently relieved by permitting it to flow down the canal channel to the Maskara itself. Navigation was a secondary object in the construction, and can now only take place between Sarnauli, in Parganah Loni, and the outlet. As will be seen hereafter, none of the canals are as yet of much value as navigation lines, whilst as irrigation channels they have been perfectly successful.

At the end of the year 1830, the canal was opened with a debit against its capital account of Rs. 4,37,996. The following tables show the financial results of the management of the Eastern Jumna Canal for a series of years. These figures differ considerably from the results shown in the annual reports, and represent the latest returns of the office of Controller of Accounts. In regard to the capital accounts both of the Eastern Jumna Canal and the Ganges Canal, the differences between the results now shown and those given in the annual accounts may be set down as due (1) to the addition now made of the balances of stock in 1861-62 and to its fluctuations since then; (2) to the addition of the other suspense balances in 1871-72; (3) to a share of the Controller's office establishment charges from 1863-64 to 1868-69, and (4) to petty adjustments, discrepancies arising from various causes having crept in formerly when the office of the Joint Secretary to Government in the Irrigation Department and the Controller were apart. In the revenue accounts of both canals, the last two sources of difference, and a transfer from the revenue to the capital account of the survey charges for remodelling the works, sufficiently explain the differences in charges; whilst the exhibition of receipts, instead of assessments, accounts for the differences under "revenue." The charges for interest have been altered to suit the revised capital accounts, and altogether the figures now given must be taken as superseding all accounts hitherto published relating to both canals. Five per cent. has been charged on the capital outlay on canals up to 1870-71, and after that the charge is four and a half per cent. Ten per cent. of the outlay on establishments has been charged to the capital account, and the balance has been apportioned rateably

over maintenance and revenue, and the expenditure on works not chargeable to either revenue or capital :—

Capital Account.

Year.	OUTLAY DURING THE YEAR.			OUTLAY TO END OF THE YEAR.		
	Ordinary.	Extraordi- nary.	Total.	Ordinary.	Extraordi- nary.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1834-35 ...	44,282	...	44,282	5,29,079	...	5,29,079
1840-41 ...	27,685	...	27,685	6,73,666	...	6,73,666
1845-46 ...	12,570	...	12,570	9,58,363	...	9,58,363
1850-51 ...	3,344	...	3,344	10,70,798	...	10,70,798
1855-56 ...	1,43,288	...	1,43,288	15,19,940	...	15,19,940
1860-61 ...	11,140	...	11,140	16,36,233	...	16,36,233
1865-66 ...	44,881	...	44,881	17,94,688	...	17,94,688
1866-67 ...	51,132	...	51,132	18,45,820	...	18,45,820
1867-68 ...	67,463	...	67,463	19,13,283	...	19,13,283
1868-69 ...	39,699	21,805	61,504	19,52,932	21,805	19,74,737
1869-70 ...	19,342	11,264	30,606	19,72,324	33,069	20,05,393
1870-71 ...	10,675	15,595	26,270	19,82,999	48,664	20,31,663
1871-72 ...	3,903	13,787	17,690	19,86,902	62,451	20,49,353
1872-73 ...	9,863	2,557	12,420	19,96,765	65,008	20,61,773

Revenue Account, A.

Year.	DURING THE YEAR.			TO END OF THE YEAR.			WORKING EXPENSES.	
	Direct income.	Increased land- revenue.	Total.	Direct income.	Increased land- revenue.	Total.	During the year.	To end of year.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1864-35 ...	53,813	...	53,813	1,24,399	...	1,24,399	51,269	2,24,099
1840-41 ...	87,437	...	87,437	5,57,991	...	5,57,991	66,605	6,04,391
1845-46 ...	1,11,491	...	1,11,491	10,78,272	...	10,78,272	66,812	9,02,467
1850-51 ...	1,59,139	...	1,59,139	178,6,307	...	17,86,507	73,924	12,68,775
1855-56 ...	96,878	...	96,878	24,81,939	...	24,81,939	81,377	16,65,075
1860-61 ...	2,84,910	...	2,84,910	32,97,350	...	32,97,350	1,18,765	22,09,441
1865-66 ...	4,14,633	60,000	4,74,633	47,93,238	2,18,000	50,13,238	1,30,613	27,71,460
1866-67 ...	4,31,315	1,77,689	6,09,004	52,26,563	3,95,689	56,22,242	1,22,474	28,93,934
1867-68 ...	5,65,602	1,77,689	7,43,291	57,92,155	5,73,378	63,65,533	1,42,085	30,36,019
1868-69 ...	5,06,245	1,77,689	6,83,934	62,98,400	7,51,067	70,49,467	1,54,881	81,90,900
1869-70 ...	6,57,279	1,77,689	8,34,968	69,56,679	9,28,756	78,84,435	1,65,076	33,55,976
1870-71 ...	6,01,040	1,77,689	7,78,729	75,56,719	11,06,445	86,63,164	1,80,955	35,36,931
1871-72 ...	5,10,263	1,77,689	6,87,952	80,66,932	12,84,134	93,51,116	1,78,801	37,35,732
1872-73 ...	5,62,535	1,23,075	6,85,610	86,29,517	14,07,209	1,01,36,726	2,19,181	39,54,913

Revenue Account, B.

Year.	NET REVENUE TO END OF YEAR.		Charges for interest to the end of the year.	DIFFERENCE BETWEEN NET REVENUE AND CHARGES FOR INTEREST TO END OF YEAR.		PERCENTAGE OF NET REVENUE ON CAPITAL OUTLAY.	
	Exclusive of land- revenue.	Inclusive of land- revenue.		Excluding land- revenue.	Including land- revenue.	Excluding land- revenue.	Including land- revenue.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1834-35 ...	—93,700	—99,700	1,13,775	—2,13,475	...	52	...
1840-41 ...	—46,401	—46,400	2,93,567	—3,39,969	...	3.22	...
1847-48 ...	1,75,805	1,75,895	4,99,738	—3,23,933	...	4.72	...
1850-51 ...	5,17,332	5,17,352	7,51,470	—2,33,538	...	7.98	...
1853-54 ...	7,56,864	7,56,864	10,44,550	—2,47,705	...	1.08	...
1859-61 ...	10,87,569	10,87,909	14,41,493	—3,53,581	...	10.53	...
1863-64 ...	20,23,778	2,41,773	18,64,251	1,59,527	3,77,527	16.23	19.66
1866-67 ...	23,32,619	27,28,308	19,53,985	3,78,634	7,74,323	17.20	27.10
1867-68 ...	27,56,136	31,29,514	20,46,370	7,03,860	12,83,238	22.94	32.58
1868-69 ...	31,07,500	33,58,567	21,41,910	9,65,69	17,16,627	18.26	27.65
1869-70 ...	35,99,703	43,28,459	22,40,670	13,59,074	22,87,780	24.92	33.92
1870-71 ...	40,19,758	51,26,233	23,40,948	16,78,340	27,85,285	20.94	29.80
1871-72 ...	43,21,250	56,15,384	24,32,719	18,98,531	31,82,665	15.33	24.07
1872-73 ...	46,74,604	61,81,813	25,25,583	21,48,731	35,53,990	16.75	22.75

The following table gives the receipts for each year under each item of demand:—

Detail of direct income.

Year.	WATER-RATE.			Mill rents.	Canal plan- tations.	Navi- ga- tion.	Miscella- neous.	Total actual receipts.
	Assess- ment.	Balances.	Realized.					
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1834-35 ...	37,918	32,018	48,310	8,335	801	...	1,367	53,813
1840-41 ...	89,136	42,564	77,249	3,208	1,505	998	4,947	87,437
1845-46 ...	96,534	55,737	98,039	8,122	1,706	415	3,209	1,11,491
1850-51 ...	1,18,302	65,305	1,34,608	14,178	3,487	750	6,116	1,59,139
1855-56 ...	1,32,315	25,750	80,884	6,770	5,255	224	3,745	96,878
1860-61 ...	2,61,196	1,42,764	27,009	5,953	3,128	60	5,760	2,84,910
1865-66 ...	4,13,700	1,21,233	3,83,141	7,305	10,569	39	13,579	4,14,633
1866-67 ...	5,32,464	1,51,902	4,06,411	7,715	11,794	2	5,393	4,31,315
1867-68 ...	4,61,698	2,77,855	5,44,153	8,853	9,817	26	2,753	6,65,602
1868-69 ...	5,99,560	1,95,500	4,80,375	9,048	5,181	38	11,603	5,06,245
1869-70 ...	5,83,842	3,14,705	6,28,487	6,896	13,569	...	8,627	6,57,279
1870-71 ...	5,44,377	2,70,060	5,78,895	7,597	11,651	13	2,984	6,01,040
1871-72 ...	4,97,835	2,35,542	4,70,942	9,708	18,153	123	2,937	5,10,263
1872-73 ...	4,21,643	2,53,438	5,23,722	8,366	26,124	118	4,205	5,62,535

The canal plantations in 1872-73 numbered 368,774 trees and 835,892 seedlings, and are gradually forming an important portion of the miscellaneous sources of revenue.

The following statement gives all the particulars connected with the supply from the main canal (130 miles) and distributaries, the duty it performs, and the area irrigated by the whole canal from the year 1860-61 to 1872-73:—

Year.	Average supply in cubic feet at Ka-siya.	Area irrigated in acres.	Area irrigated per cubic foot of supply in acres.	Length of distributaries open in miles.	Area irrigated per mile of distributary in acres.	Water-rate assessments.	Water-rate.		
							per mile of distributary.	Per cubic foot of supply.	Per acre irrigated.
						Rs.	Rs.	Rs.	Rs.
1860-61 ...	1,000	2,61,327	296	602	...	2,61,196	...	...	...
1861-62 ...	932	1,81,331	194	602	301	2,53,004	420	271	1.39
1862-63 ...	1,025	2,25,268	220	602	374	3,21,791	534	314	1.43
1863-64 ...	1,106	1,60,355	145	596	269	4,13,760	694	374	2.59
1864-65 ...	1,068	2,39,555	224	596	401	5,32,464	893	493	2.22
1865-66 ...	971	1,82,544	196	596	306	4,61,698	774	496	2.53
1866-67—									
Kharif ...	1,095	1,02,141	63.0		169.4	2,60,761	465	256.4	2.75
Rabi ...	792	1,71,960	217.5		285.1	3,18,319	529	402.5	6.85
Total ...	...	2,74,101	280.5	602	454.5	5,99,580	991		
1867-68—									
Kharif ...	1,305	1,19,163	91.3		196.6	3,11,592	514	238.8	2.61
Rabi ...	735	1,31,904	179.5		217.7	2,72,250	449	370.4	2.06
Total ...	...	2,51,067	270.8	606	414.3	5,83,842	963		
1868-69—									
Kharif ...	1,134	98,112	86.3		161.3	3,06,096	503	269	3.12
Rabi ...	778	1,14,603	148.6		183.1	2,38,281	392	306	2.08
Total ...	...	2,12,715	234.9	608	349.7	5,44,377	895		
1869-70—									
Kharif ...	993	72,404	72.9		116.1	2,43,534	400	245	3.36
Rabi ...	970	1,20,345	124.0		154.5	2,54,304	411	262	2.11
Total ...	...	1,92,749	196.9	610	310.6	4,97,838	811		
1870-71—									
Kharif ...	1,058	79,699	75.3		127.6	2,72,146	435	257.1	3.41
Rabi ...	1,043	1,04,455	100.1		167.1	2, 9,497	351	210.4	2.10
Total ...	...	1,84,154	175.4	625	294.1	4,91,643	786		

The area irrigated in 1873-74 amounted to 168,048 acres.

The water-rate was increased on the 1st May, 1865, to the following rate:—

Class.	Nature of crop.	Per acre irrigated by		Per
		Natural flow.	Lift.	
		Rs. a. p.	Rs. a. p.	
I.	Sugar cane,	5 0 0	3 5 4	Year. Crop.
II.	Rice, tobacco, opium, vegetables, gardens, orchards, and water-nuts.	3 0 0	2 0 0	
III.	All rabi crops, indigo, cotton ...	2 4 0	1 8 0	Ditto.
IV.	All kharif crops and those not specified above.	1 10 8	1 0 0	Ditto.

Taking these classes, the proportion of irrigation which reaches each class is as follows:—

Year	Class I.			Class II.			Class III.			Class IV.		
	Flow.	Lift.	Total.	Flow.	Lift.	Total.	Flow.	Lift.	Total.	Flow.	Lift.	Total.
1865-66...	15 58	3 66	18 64	24 73	0 171	24 90	42 02	10 12	62 15	3 120	1 170	4 29
1866-67...	7 634	1 554	9 189	15 95	0 262	16 21	54 85	14 25	69 11	3 714	1 761	5 47
1867-68...	12 15	2 34	14 79	23 52	0 52	24 04	47 62	12 28	58 88	1 73	0 56	2 29
1868-69...	9 55	2 0	11 56	13 74	0 34	14 08	50 73	14 17	64 91	7 26	2 17	9 41
1869-70...	8 75	2 12	10 87	19 07	0 40	19 47	45 67	12 72	48 39	7 89	2 84	10 73
1870-71...	10 52	2 05	12 53	22 26	0 44	22 70	46 70	13 31	60 10	3 54	1 08	4 62
1871-72...	10 25	2 38	13 23	17 68	0 33	18 01	54 31	13 54	67 85	0 83	0 08	0 91
1872-73...	12 38	2 55	14 89	22 01	0 36	22 37	48 62	11 86	60 48	1 89	0 37	2 26

The number of times and days that the canal has been without water is shown below:—

Year.	Number of times closed.	Number of days closed.	Year.	Number of times closed.	Number of days closed.
1836-40 ...	58	203	1856-60 ...	36	267
1841-45 ...	53	356	1861-65 ...	31	240
1846-50 ...	48	194	1866-70 ...	14	216
1851-55 ...	47	265			
			Total ...	287	1,741

GANGES CANAL

The example of the success attained on the Jumna Canals, and the necessity for the adoption of some great scheme of irrigation to meet the periodical occurrence of droughts, led to attention being directed to the Ganges as affording the most constant and sufficient supply of water for a canal that was designed to irrigate the Duáb from the Siwálik hills to Cawnpore. Captain Debude's scheme, drawn up in 1827, for utilising the waters of the West Kálí Nadi along the line of the Abu Nálá, for the irrigation of the Meerut, Aligarh, and Bulandshahr Districts, was shown to be deficient in supply and certainty. The united streams of the Hindan and West Kálí Nadi were found not to be able to give more than 180 days' supply during the dry months, and during the rains the works would be subject to excessive flood action. Colonel John Colvin, C.B., recommended an examination of the Ganges above and below Hardwár, and on his departure from India in 1836, a series of levels was taken. The Bánganga is connected with the Ganges in the same manner that the Budhi Jumna is with the Jumna, and it was thought possible to utilise the Bánganga for the headworks of the proposed canal in the same manner in which the Budhi Jumna had been used for the Eastern Jumna Canal. The levels showed that this plan was not feasible, owing to the sudden rise of the uplands on the west of the Soláni river, which effectually prevented the taking of water from a place so low down as the proposed site at Bádsháhpur on the Bánganga. Inquiries were still farther urged in consequence of the sufferings of the inhabitants of the Lower Duáb during the great famine year (1837-38), when, notwithstanding a loss by remission and otherwise of revenue to the amount of over one and a quarter millions sterling, the people perished in hundreds of thousands from starvation, the loss of cattle was equally great, the fields remained untilled, and a total stagnation of trade and manufactures ensued.

Early in December, 1839, Major P. T. Cautley proceeded to Hardwár and commenced a close examination of the *khádir* or low-lands of the Ganges in its vicinity. He first attempted to connect the Bánganga project with Debude's proposal for a dam on the west Kálí Nadi at Ránípur, the head of the Abú Nálá. He, however, found that from the surface of the water at Bádsháhpur, on the Bánganga, to the surface of the water of the West Kálí Nadi at Ránípur, a distance of forty miles, there was only a fall of $12\frac{3}{4}$ feet whilst the high lands on the banks of the latter river near Ránípur were thirty feet higher than the initial level at Bádsháhpur. For the first ten miles from Bádsháhpur to the edge of the upland cliff, the land for nine miles is tolerably level, but it then suddenly rises until it gains an elevation of 83·225 feet near the village of Kumbhera, from which place there is a slope towards Ránípur of about $2\frac{1}{2}$ feet in the mile. Thus a

second and closer examination of the proposed site entirely removed this project from the list of those to be attempted. Major Cautley next examined the triangular patch of *Mullis* lying between Rurki and Hardwár, and discovered two lines through which a canal might be taken. The first had a very extended circuit stretching far to the west, and much interrupted by forest and drainage lines; the second was more direct, but necessitated the construction of an aqueduct across the Soláni. He gave in an estimate for a canal on a minimum scale amounting to 26 lakhs of rupees and providing for 256 miles of main canal and 73 miles of branches, with the necessary appliances for converting the main canal into a navigable line.

The Board of Directors, in their despatch of the 1st September, 1841, warmly took up the subject, and wrote that, "apart from the consideration of financial results, which we are far from contemplating with indifference, there are few measures connected with our revenue administration in India more calculated to contribute to the general improvement of the country, the amelioration of the condition of the people, and to raise the character of the Government, than those of the nature now under our consideration." We concur in opinion with the Government of Agra that a higher ground for advocating these works is found in the security which they afford against famine and its attendant horrors." On receipt of this sanction, a committee was appointed to report on the efficiency of the proposed works, the probable success of the undertaking, the scale on which it should in the first instance be carried on, and the precise measures to be recommended for adoption, the probable effects of the abstraction of the maximum supply of water on the navigation of the Ganges, the probable cost of the extension of the canal to Allahabad, and the probable return from the work. The committee recommended the adoption of the straight line with an aqueduct across the Soláni, and that 6,750 cubic feet per second should be drawn from the Ganges to provide for one main line of navigable canal from Hardwár to Cawnpore, and to supply irrigation to the whole district bounded by the Ganges on the one side and by the Hindan and the Jumna on the other. On the subject of returns, the committee calculated that irrigation would be provided for 2,303 square miles of 1,024 *bighas* each, which at ten annas a *bigha* would give Rs. 14,86,420, independently of mill-rents, navigation dues, and the sales of miscellaneous canal produce.

The works were commenced on the 16th April, 1842, by opening the excavation between Kankhal and Hardwár, but were stopped in the following July, owing to certain doubts entertained by the Supreme Government as to the propriety of proceeding with the works. These orders were subsequently withdrawn, and permission given to expend up to two lakhs of rupees per annum. The principal objection urged

against the scheme was one based on a clerical error in placing the point of a decimal, by which the proportion of surface of the Duáb which would derive benefit from the canal was much exaggerated, but this was soon cleared up. The probable effect of earthquakes was brought to bear against the construction of the Soláni aqueduct. The injury to the navigation of the upper Ganges and the probable dissemination of malarious diseases were also urged against the canal. "The works, however, had proceeded too far to be violently stopped, and under the restrictions pointed out above, they steadily proceeded with the cordial support of the Agra Government, but with little countenance from other quarters." Major Cantley was the leading spirit of the whole scheme, and under him Lieutenant Strachey, R.E., for some time assumed the executive direction of the northern division of the canal. Early in 1843-44 the levels of the Duáb were completed as far as Allahabad, and reported on in 1845.

Previous to undertaking this survey, the Supreme Government had decided upon a total modification of the original design, and had ordered that the canal "should be in the first place a canal of navigation, and all the water not required for that purpose may be distributed for the purposes of irrigation." The main line was then directed upon Allahabad instead of Cawnpore, and Major Cantley placed, in connection with it, three projects before Government, with estimates of the cost of each appended to them. The first for a main line ending at Allahabad, with a slope of 24 and 12 inches per mile, falls and locks to overcome the superfluous slopes in the northern parts, and ascents and descents into the Jumna. Efficient means of irrigation on the main line were provided as far as the boundary of the Cawnpore and Fatehpur Districts, and, in addition, projects for a branch line of 160 miles to Fatehgarh; of 70 miles to Bulandshahr; of 172 miles to Etáwa; and of $43\frac{1}{2}$ miles to Cawnpore were submitted, at a cost of Rs. 1,02,36,644. The second scheme differed from the first by continuing the main line from Cawnpore to Allahabad by a system of reservoirs and locks to the Jumna, and extending the irrigation to the neighbourhood of the town of Cawnpore, the tail water to be discharged into a ravine of the Pándú Nádí. This was estimated to cost Rs. 97,03,558. By the third scheme, the navigable channel turned off at Jár to the south and joined the Jumna opposite its confluence with the Ken. The Cawnpore line was also designed to be navigable and looked into the Ganges, with a branch for irrigation towards the junction of that river and the Pándú. This plan was estimated to cost Rs. 93,39,747.

Several changes occurred at this time in the administration of these provinces; Mr. T. C. Robertson was succeeded by Mr. George Clerk, who was followed by Mr. Thomason, and in the middle of 1844 Lord Ellenborough became Governor-

Changes in the administration.

General. Major Cautley went on furlough to England and was succeeded by Major W. Baker, B.E., in 1845, who with his assistants were obliged to abandon their work to take part in the Sikh war. A committee appointed to report on the influence of the canal on navigation and climate presented the results of their investigations early in 1847 with such a favourable view of the scheme that Government directed the vigorous prosecution of the work. Again irrigation became the primary object of the canal, and it was directed, as far as possible, to lead the channel along the natural level of the country, following the watershed and interfering as little as possible with existing lines of drainage. The falls were to be made available as motive power for machinery, and arrangements were to be taken in hand for the formation of reservoirs and plantations as on the Jumna canals. It was determined, therefore, to push on the Soláni aqueduct and other masonry works as a first measure, as without them the full supply could not be utilised. The whole line and its branches was mapped out into divisions, and the principal works commenced with vigour, whilst the detailed surveys were carried on during 1847-48. Lieutenant-Colonel Cautley returned and assumed charge of the canal in January, 1848.

Up to this period the works had been proceeding on the third plan suggested by Colonel Cautley in 1845 and noted above. Difficulties were encountered in the character of the sub-stratum, which was found to be sandy and to underlie the clayey surface soil at depths varying only from three to ten feet. The alignment of the canal had, at this period, been devised so as to best economise the water and to deliver it over to the southern districts, where, from the difficulty of sinking wells and the lowness of the water levels, its benefits would be most appreciated. The main line was carried on according to the original estimate for 180 miles, throwing off from the left, at the 50th mile near Jauli, a branch intended to proceed to Fatehgarh, but stopping at Anúpshahr, and on the right, at the 110th mile near Nidhauri, the Bulandshahr branch. Between the latter and the 180th mile a branch was thrown off to irrigate the country lying to the left of the Karon river and to the right of Kol, which is also at present unused. At the 180th mile a few miles below Kol, the main line divided into two channels, one on the left bearing directly on the Ganges at Cawnpore, and the other on the right, known as the Etáwa branch, debouching into the Jumna near the boundary of the Fatehpur and Cawnpore Districts. The latter kept to the right of the Rind river, watering the Jumna parganahs. These modifications led, with a few exceptions, to the total re-projection, not only of the masonry works, but of the capacity of the canal channel itself. The cuttings were deepened, superfluous slopes were disposed of, and arrangements made for the supply of water to the new branches in the southern division. The cold-weather rains of 1850-51 seriously impeded the manufacture of bricks, but the delay then caused was made

up in the two following years, which were marked by an uninterrupted and steady advance in the northern division, on a scale that could not be exceeded. The canal was opened on the 8th April, 1854.

At the time of opening the canal, the condition of the works was generally as follows. Above the northern terminus of the Soláni aqueduct the canal was competent to receive and retain safely whatever supply might be admitted. Below the southern terminus to Nánú, a distance of 180 miles from the head, the channel was also good, as well as to Gihror, $57\frac{1}{2}$ miles from Nánú, on the Etáwa branch, and as far as the 81st mile on the Cawnpore terminal branch. Between the northern and southern termini of the Soláni aqueduct lay the works, which rendered the maintenance of a continuous supply impracticable. The masonry aqueduct and the left embankment were quite safe, but the right embankment of the earthen aqueduct was throughout incapable of retaining a full supply. The canal was accordingly closed again on the 12th April, and preparations were at once made for completing the earthwork. A light railway and boats were employed to carry the earth to the spot, but in August alarming signs of failure showed themselves in the masonry revetments of the right bank. At a point about 1,000 feet above the masonry aqueduct, the rear wall of the revetment bowed out to a maximum of 2.62 feet over a section of 300 feet. The result of this was that the arches bearing the steps of the revetment fell in, and on examination the cone of the embankment was found to consist of a semi-fluid mass. The engineers went to work vigorously, so that the canal was re-opened on the 6th November, 1854. At the same time the precaution was observed of admitting the water very slowly. At first only two feet of water was allowed to flow, but from January, 1855, the volume was increased, and by the 2nd of February the water reached Cawnpore. This second trial led to the discovery that the brick-on-edge floorings of several of the falls had been disturbed, and the masonry aqueduct on the Soláni was not water-tight, so that a second closing of the canal for one month was found necessary in March, 1855. It was again opened on the 1st of April, and in one week the water this time reached Cawnpore, and from the 1st May, 1855, irrigation commenced throughout the upper sections of the canal. The knowledge derived from the actual experience in the management of such a large body of water during the next ten years showed that there were several points in which the existing system of construction might be improved. Suggestions were frequently thrown out on isolated subjects, and these were gathered into a formal plan by Major Crofton, whose proposals became the subject of much minuting and correspondence.

The result of these discussions was, in 1866, the appointment of a committee by the Governor-General to decide upon the propriety of proceeding, as previously deter-

The committee of 1866.

mined, with Major Crofton's project for remodelling the canal, or of stopping its progress pending the preparation of a detailed project according to the views of Major-General Sir A. Cotton, with a comparison of the cost and advantages of the two plans. The committee was composed of Colonel E. Lawford, R.E., Lieutenant-Colonel J. C. Anderson, R.E., Lieutenant-Colonel J. G. Fife, R.E., George Sibley, C.E., and Hugh Leonard, C.E. The committee assembled at Cawnpore and examined the Jumna at Agra, the confluence with the Hindan at Ali, the canal works as far as the Dabauli falls, the Ganges at Rājghāt, and from Garhmuktesar to the Solāni. The result of their deliberations was that the construction of a weir across the Ganges below its confluence with the Solāni was not recommended. The project for opening an additional canal head near Rājghāt on the Ganges, for bringing under irrigation lands then not watered by the canal, was considered feasible, but was recommended to be kept in abeyance "until the probable returns appear more proportionate to the outlay than at present." Major Crofton's plan for remodelling the canal was to be proceeded with, subject to certain modifications. The construction of a permanent weir across the Ganges at Haridwar was judged absolutely necessary if it were intended to maintain a flow of 7,000 cubic feet per second without interruption. Sir A. Cotton contended that it would have been far better to open the canal heads below Shukartār in the Muzaffarnagar District, and that even then, instead of expending large sums on the improvement of the existing line, it would be preferable to open a new head above Shukartār. The committee found the valley of the Ganges there four miles wide, most of which comprised a low bed continually encroached upon by the river, and lying at such a depth below the high bank as to preclude the possibility of carrying the water on to the central tracts of the Doāb unless at a very great sacrifice. Garhmuktesar, too, had the same drawbacks. The great breadth of the river bed, the unfavourable nature of the banks, combined with the scarcity of good material, rendered it a most objectionable position for a canal head. The committee then recommended the neighbourhood of Rājghāt, where the Morādabad and Aligarh line now crosses the Ganges, as the point from which the main line might be supplemented or a new line drawn. The remodelling project embraced the construction of additional falls and the removal of the evils caused by the excessive velocity of the current at the existing falls, besides rendering the main line capable of carrying 7,000 cubic feet of water per second. The headway under the bridges in many cases was found insufficient to admit of the passage of laden boats, and all these matters are now obtaining their full share of attention. The only accidents of late years were the injuries caused to the Jauli falls and Rānpur lock, both of which have been repaired. The remodelling project, with certain modifications, has been actively carried out since 1868 as opportunities

occurred by the temporary closing of the canal. The whole of the falls of the canal have been made secure, with the exception of those at Jauli, which is to be relieved of half the present pressure of head-water upon it by the construction of a second fall above the existing works. The history of the next ten years will show the effect of these improvements on the efficiency of the canal.

A short sketch of the physical peculiarities of the country through which

The *Khádir*.

the canal flows is necessary to complete this notice.

The *khádir* or low-lying tract in the north-east of the Saháranpur District is separated from the uplands by a ridge running in a south-easterly direction from the Shahjahánpur and Kunjnáwar passes in the Siwálíks, to the Ganges at Shukartár. The drainage to the west of this line falls into the Jumna by the West Kálí Nádí, and that on the east falls into the Ganges. The towns of Bhagwánpur, Rúrki, Jaurási, Landhaura, and Núr-nagar are situated on this ridge, and overlook the deep depression of the *khádir* on the east. This *khádir* is bounded on the east by the Ganges, and is alternately flooded or drained by the Soláni, Pathari, and Ratman rivers. The Ganges at Hardwár is about a mile in breadth at its narrowest point, and divides into several channels separated by islands. One of these channels or branches leaves the main stream about $2\frac{1}{4}$ miles above Hardwár, with a considerable volume of its own, and passes down close to the town, rejoining the present stream below Kankhal. It was from a place on this stream, known as Ganesh Ghát, in the village of Mayapur, that the canal was drawn off, as it was found that this branch carried away more than one-third of the total volume of the river, and thus gave a supply amply sufficient for the whole canal. The heads were further strengthened by the construction of a spur dam and escape cuts. A great portion of the *khádir* tract here consists of the débris of the *bángar* or uplands, which has been swept down towards the Ganges by the mountain torrents which run through it. In addition to this slope to the east, this tract has a slope also parallel to the line of the Ganges itself. Taking advantage of this circumstance, Colonel Cautley so arranged his line that, after obtaining the levels he required, and disposing of the superfluous slope by the construction of masonry falls on the canal, he was enabled to enter the high bank in a moderate cutting. Thus the point at which the Soláni is crossed, though 80 feet below the head at Hardwár, it is 70 feet above the surface water of the Ganges to the east. Between the Mayapur regulating bridge and Rúrki, one of the first obstacles encountered was the Ránípur torrent system at a distance of about $5\frac{1}{2}$ miles from the regulator. The water of this drainage line spreads so over the whole face of the country as to leave hardly any trace of a defined channel. A dam was at first made, with an inlet and outlet on the system that had been followed in the upper works on the Eastern Jumna Canal, but the floods of 1849 showed that this plan was attended with such a deposit of silt

to be completely interior with the canal itself. A superpassage for the conveyance of the torrent over the canal was accordingly constructed with a waterway of 200 feet. The advantages of this method of crossing the drainage were soon apparent, resulting in the utter freedom from silt and the evils arising from the contact of two streams meeting each other at right angles, freedom from all wear and tear of channel necessary on the admission of the torrent into the canal bed, freedom from the anxiety of opening and shutting sluices, and regulating the escapes at the dams, freedom from all establishment for working the dams, and a consequent reduction of a large permanent establishment necessary for their maintenance. The passage of the Rānīpur torrent over the canal is obtained by throwing arches over the lower levels of the falls, the waterway of which was divided into eight parallel descents of 25 feet in width, with a passage of 19 feet in width on the left for the navigable channel. All arrangements were made for securing the ingress and egress of the torrent from the superpassage. Between Mayapur and the Rānīpur torrent the principal works are two bridges for cross-communication at Kankhal and Jawālāpur, an outlet on the left bank at Kankhal, and three inlets on the right bank at Landa Laniwāla, Kankhal and Jawālāpur, giving an inlet of 200 feet waterway and an escape of 20 feet.

Between the Rānīpur superpassage, with its falls and locks, and the Ratmanu torrent, the principal works are the falls No. 2, with a drop of nine feet; falls No. 3, with a similar drop; the Sainpur inlet, with a 15 feet opening; the Pathari superpassage, with a waterway of 300 feet in width, connected with the Dhanauri falls No. 4, having a drop of nine feet into the bed of the canal; the Bādshāhpur inlet, with an opening of fifty feet; the Ratman dam and inlet, with an escape of 800 feet and a bridge for the purpose of regulating the canal supply and of cutting off the canal stream from its passage onwards towards the Pīran Kaliyar excavation and the Solāni aqueduct, together with a bridge for cross communication north of the works, and a line of navigable canal from the Jawālāpur bridge to the tail of the Pathari superpassage. From the success attending the Rānīpur superpassage, a similar plan was adopted with the Pathari. The Ratmanu torrent, that was next met with, was, owing to its considerably lower level, somewhat more difficult to manage than the others. The valley here was a mile in width, bounded on the right by the steep bank of Pīran Kaliyar, and having a slope from the point where its main branch left the hill to the intersection of the canal of 30.18 feet per mile. The effective slope at the point of intersection was 8.23 feet. The works constructed here consisted of a dam, of which the bed was flush with the river bed, and masonry sluices on the left for an escape, and an open branch through the right for admitting flood-water. From the Ratmanu regulating bridge to the high land of the Dnāb the canal runs in an uninter-

rupted straight line, reaching the high land to the east of the town of Rūrki. Then by a curve to the left, which commences at the terminal point of the Solāni aqueduct, the channel proceeds in a straight line to the Asafnagar falls. The slope from the flooring of the Ratmau regulator to the Rūrki bridge was fixed in 1854 at 1.25 feet per mile, and from the latter place to the falls at 1.095 feet per mile. On leaving the Ratmau regulator, the canal channel passes for 5,000 feet through the low land of the Ratmau river. It then enters the Pīran Kaliyar ridge. Through this ridge it has a course of 10,700 feet, with a mean depth of excavation of 31 feet and a maximum of 37 feet.

At a point opposite the village of Pīran Kaliyar, a masonry bridge, with a waterway of 165 feet, has been constructed to connect the village with the temple tombs, and reservoir at the Dargāh on the opposite side. On the approach of the channel to the villages of Bajuhari and Mahewar the line crosses a hollow connected with a ravine which drains this portion of the ridge. An artificial cut made from the hollow on the right of the canal, diverted the drainage to the west of the Mahewar village. From this point the works of the Solāni aqueduct commence. The Mahewar hollow has, on both sides of the canal, channels of escape built in connection with the aqueduct and carried under the embankments. From these escapes, the downstream bank of which rests on the upper terminus, the canal passes the Solāni valley in a channel whose base is 150 feet in width, formed on a massive earthen embankment which was constructed from the excavation of the Pīran Kaliyar ridge. The channel is revetted throughout its length with masonry disposed in the form of continuous steps resting on arches. The river itself is passed by a series of fifteen archways of fifty feet in width each. The level of the flooring of the aqueduct is 24 feet above the bed of the Solāni, and this may be considered the maximum difference of level between the bed of the canal and the surface profile of the valley on the whole length upon which the aqueduct passes. The great advantage derivable from the adoption of this plan is, that the canal was thus enabled to enter the *bāngar* or uplands at Rūrki with a moderate cutting. The total length between the extremities of the termini is 15,687 feet, or 2 miles, 7 furlongs and 507 feet, of which 932 feet is masonry and the remainder earth-work.¹ Cattle ghāts and bridges were erected at either end. From the Rūrki terminus, the canal passes to Asafnagar by an abrupt curve protected by a masonry revetment on its right or concave side for 3,200 feet.

Between Rūrki and Nānū, a distance of 160 miles, the country through which the canal passes is marked by great declivity of surface, and by its connection with *blūr* or tracts of sand-hills. After leaving Rūrki the canal turns to the left, and continues on a bearing

¹ Full details of the work on the Solāni will be found in Cautley's Ganges Canal, II, pp. 411—537, from which this notice is taken.

almost due south for about 20 miles, until it reaches the neighbourhood of Belra. On this line it runs parallel to and between the high bank overlooking the *Mull* and the *Sila Khāda*, a shallow depression forming a tributary of the West Kālī Nadi. Throughout the whole of this tract the surface is marked by undulating ridges of sand, either skirting the edges of rivers or throwing out ramifications transversely. The line of canal crosses three of these ridges. Beyond Belra the canal makes a slight turn to the right, increasing the curve near Khārauli, where it passes the heads of the East Kālī Nadi, which henceforth separates the canal from the Ganges. The distance between the East and West Kālī at this point is about eight miles, and through the centre of this tract the canal passes. From a point on the 50th mile a channel is given off to water the tract between the East Kālī and the Ganges, known as the Anúphahr branch and having a length of 83 miles. The other works of importance are those at the 114th mile, where the Bulandshahr branch is thrown off, of which ten miles is regarded as a branch and the remainder as a distributary. The main line proceeds to Nánú, in the Aligarh District, where it divides into two branches, each 170 miles long: that on the right falls into the Jumna in the Etáwa District, and that on the left into the Ganges at Cawnpore. The distance from Mayapur to Nánú is 181 miles; thus we have 614 miles of main canal, and 3,111 miles of minor distributary channels branching off from the main canal throughout its course, and which are more particularly noticed under each district.

The mode in which the accounts have been prepared is sufficiently explained under the notice of the Eastern Jumna Canal. The following tables show the revenue and capital charges and receipts as recently adjusted in the public accounts:—

Capital Account.

Year.	Outlay during the year.			Outlay to the end of the year.		
	Ordinary.	Extraordinary.	Total.	Ordinary.	Extraordinary.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1854-55	...	...	...	1,51,45,277	...	1,51,45,277
1855-56	5,45,433	...	5,45,433	1,91,02,610	...	1,91,02,610
1856-57	19,70,419	...	19,70,419	2,10,73,029	...	2,10,73,029
1857-58	4,86,945	...	4,86,945	2,15,59,974	...	2,15,59,974
1858-59	3,21,609	...	3,21,609	2,18,81,583	...	2,18,81,583
1859-60	5,10,078	...	5,10,078	2,23,91,661	...	2,23,91,661
1860-61	3,24,752	...	3,24,752	2,27,16,413	...	2,27,16,413
1861-62	4,19,767	...	4,19,767	2,31,36,180	...	2,31,36,180
1862-63	1,58,377	6,78,692	7,37,069	2,32,94,557	5,78,692	2,38,73,249
1863-64	1,87,490	5,13,340	7,00,830	2,34,82,047	10,92,032	2,45,74,079
1864-65	21,122	5,35,808	5,56,930	2,35,03,169	16,27,840	2,51,31,009
1865-66	38,664	2,24,860	2,63,524	2,35,41,833	18,52,700	2,53,94,533
1866-67	44,924	3,27,847	3,72,771	2,35,86,757	21,80,547	2,57,67,304
1867-68	1,21,625	4,06,103	2,81,478	2,34,65,132	25,86,650	2,60,51,782

Revenue Account, A.

Year.	DURING THE YEAR.			TO END OF THE YEAR.			WORKING EXPENSES.	
	Direct income.	Increased land-revenue.	Total.	Direct income.	Increased land-revenue.	Total.	During the year.	To end of the year.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1855-56	17,215	...	17,215	17,215	...	17,215	2,79,934	2,79,934
1860-61	4,80,468	7,991	4,38,862	10,68,983	15,988	10,24,976	3,59,165	18,62,880
1861-62	6,83,090	11,887	6,94,983	16,92,084	27,875	17,19,959	3,86,856	22,49,236
1862-63	7,57,759	16,887	7,74,646	24,49,843	44,762	24,94,605	6,15,538	28,64,774
1863-64	4,79,511	59,387	5,30,398	29,29,354	1,04,649	30,34,003	5,67,476	34,31,250
1864-65	7,60,975	72,315	8,39,290	36,96,329	1,76,964	38,73,293	8,17,355	42,49,605
1865-66	11,79,596	72,315	12,52,211	48,76,225	2,49,279	51,25,504	7,59,754	51,03,359
1866-67	14,60,136	1,79,639	16,39,775	63,36,361	4,28,918	67,65,279	7,65,103	57,68,462
1867-68	16,15,516	1,80,776	17,96,292	79,51,877	6,09,694	85,61,571	7,96,716	65,65,178
1868-69	15,54,040	1,82,164	17,48,204	95,17,917	7,91,857	1,03,09,775	7,99,622	73,64,800
1869-70	25,69,536	1,83,484	27,53,020	1,20,87,453	9,75,342	1,30,62,795	9,23,765	84,88,565
1870-71	17,78,153	2,02,980	19,81,133	1,38,66,606	1,78,322	1,50,44,928	8,68,716	91,67,281
1871-72	18,29,075	2,29,341	20,58,416	1,56,94,681	14,07,663	1,71,02,344	9,13,683	1,00,70,944
1872-73	15,89,919	2,66,688	18,66,600	1,72,84,600	16,84,344	1,89,68,944	9,88,713	1,10,59,677

The *kharif* of 1855 showed only 225 miles of *rājbahas* or distributaries in actual work over 450 miles of main canal, into which the irrigated area. water had been admitted, whilst 633 miles of distributaries were under preparation. The mileage opened at the close of the year was 436. The area irrigated during the year amounted to 98,000 canal *bighas*, or 54,734 acres, whilst about 166,000 acres in 1,134 villages were placed beyond the risk of serious damage by drought. The system of collecting the value of the *rājbaha* works from the villages through which they were constructed led apparently to such a check upon the demand for water, that on Colonel Baird Smith's representation the charge was postponed for some years. The canal was divided into five divisions: the northern, upper central, lower central, Cawnpore terminal, and Etāwa terminal divisions, whilst the Navigation Department was placed under a superintendent resident at Rūrkī. In spite of all the disturbing influences of the year 1856-57, the area under irrigation trebled during 1858-59; the water-rate on the *rabī* increased by 12 per cent., and on the *kharif* by 93 per cent. The following statement shows the total area (in acres) irrigated by the Ganges Canal from the year 1859-60 to the year 1863-64, the details of which are given under each district:—

Year.	Kharif.	Rabī.	Total.	Year.	Kharif.	Rabī.	Total.
1859-60 ...	33,292	95,431	128,723	1862-63 ...	90,693	114,912	205,605
1860-61 ...	69,361	273,549	342,910	1863-64 ...	97,538	352,250	449,788
1861-62 ...	77,522	294,800	372,322				

The length of main canal since 1859-60 is 519 miles. The length of the Fatchgarh and Bulandshahr branches from 1862-63 to 1867-68 was 127 miles; from that date to the end of 1871-72 they measured 135 miles, and in 1872-73 the returns show 96 miles. The irrigating capacity of the canal is equal to 1,205,000 acres. From 1855 to 1860 the canal was closed three times, for in all 27 days: from 1861 to 1865 there were ten closures, which lasted for 156 days; and from 1866 to 1870 the canal was without water for 160 days, distributed over seven closures.

Revenue Account, B.

Year.	NET REVENUE TO END OF YEAR.		Charge for interest to the end of the year.	DIFFERENCE BETWEEN THE NET REVENUE AND CHARGE FOR INTEREST TO END OF YEAR.		PERCENTAGE OF NET REVENUE ON CAPITAL OUTLAY.	
	Exclusive of land-revenue.	Inclusive of land-revenue.		Excluding land-revenue.	Including land-revenue.	Excluding land-revenue.	Including land-revenue.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1855-56 ...	2,62,719	2,62,719	25,73,609	28,36,328	...	—73	...
1860-61 ...	8,53,892	8,37,801	69,96,914	78,50,806	78,34,818	0.34	0.42
1861-62 ...	5,57,152	5,29,277	79,52,044	85, 9,196	84,81,321	1.55	1.61
1862-63 ...	4,14,931	3,70,169	93,05,695	94,20,626	93,75,864	0.67	.75
1863-64 ...	5,02,896	3,98,247	1,00,83,693	1,05,86,589	1,04,81,940	—40	—13
1864-65 ...	5,53,276	3,76,812	1,11,77,172	1,17,81,048	1,15,54,084	—23	.10
1865-66 ...	1,27,181	1,22,145	1,22,97,355	1,24,24,489	1,21,75,210	1.90	2.22
1866-67 ...	5,67,899	2,96,817	1,34,33,175	1,28,65,276	1,24,46,358	9.05	3.85
1867-68 ...	13,46,699	19,96,393	1,45,89,984	1,32,03,285	1,25,93,591	3.53	4.32
1868-69 ...	21,53,117	29,44,975	1,57,83,646	1,36,30,529	1,28,38,671	3.21	3.97
1869-70 ...	37,98,888	47,74,280	1,70,12,349	1,32,13,461	1,22,38,119	6.69	7.44
1870-71 ...	47,08,325	58,86,647	1,82,65,899	1,35,60,574	1,23,82,252	3.61	4.42
1871-72 ...	56,23,717	70,31,380	1,94,16,698	1,37,92,981	1,23,85,318	3.60	4.50
1872-73 ...	62,24,993	79,03,267	2,05,33,302	1,43,58,379	1,26,74,035	2.32	3.40

The following statement gives the returns of receipts for each year under each item of demand:—

Details of direct income.

Year.	WATER-RATE.			Navigation.	Mill rents.	Plantations.	Miscellaneous.	Actual receipts.
	Balances.	Assessments during the year.	Realized.					
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1855-56 ...	...	34,613	3,258	2,644	4,274	6,614	425	17,215
1860-61 ...	1,37,632	4,91,819	2,77,572	1,12,757	16,920	11,118	12,501	4,30,868
1861-62 ...	3,51,923	5,99,370	5,76,665	55,725	18,832	17,789	14,085	6,83,096
1862-63 ...	3,74,634	4,51,361	6,76,842	46,834	12,946	14,473	6,664	7,57,759
1863-64 ...	1,49,153	6,93,134	3,99,255	35,376	16,070	15,976	12,134	4,79,511
1864-65 ...	4,43,092	8,95,042	6,73,565	41,248	15,996	26,051	11,015	7,66,976
1865-66 ...	6,64,309	12,69,748	10,85,140	20,949	28,843	34,456	15,467	11,79,896
1866-67 ...	8,49,117	14,06,030	13,32,437	38,919	25,603	45,983	17,994	14,60,136
1867-68 ...	9,22,710	12,33,490	14,90,482	35,218	26,903	45,721	17,187	16,56,116
1868-69 ...	6,70,718	22,65,320	13,89,801	33,784	25,793	88,910	21,762	16,66,040
1869-70 ...	15,46,237	17,57,573	24,16,804	33,593	20,771	66,590	31,778	25,69,536
1870-71 ...	8,87,006	17,80,176	16,47,055	30,890	30,000	38,084	32,124	17,78,153
1871-72 ...	10,29,127	14,25,875	16,75,240	59,306	36,395	38,005	20,126	18,29,075
1872-73 ...	7,70,762	15,72,198	14,54,561	29,815	19,510	58,294	23,689	15,69,919

The following statement gives the irrigation statistics from the year 1864-65 to the year 1872-73:—

Year.	Average supply at Rurki in cubic feet.	Area irrigated in acres.	Area irrigated per cubic foot of supply in acres.	Length of distributaries opened in miles.	Area irrigated per mile of distributary.	Water-rate in rupees.	Water-rate in rupees.		
							Per mile of distributary	Per cubic foot of supply at head.	Per acre irrigated.
1864-65... ..	4,026	566,517	140	2,440	232	6,95,042	367	222	1.58
1865-66... ..	4,314	573,129	133	2,777	206	12,69,749	457	294	2.21
1866-67.									
Kharif	4,391	181,658	41.37	3,039	60	5,12,373	168	117	2.83
Rabi	4,781	453,076	103.55	...	149	8,93,660	294	187	1.87
Total ... ..	...	634,734	144.92	...	209	14,06,033	...	...	...
1867-68.									
Kharif	4,340	185,187	42.66	3,040	60	5,62,926	185	129	3.04
Rabi	3,540	348,319	98.39	...	114	6,75,564	222	198	1.91
Total ... ..	...	533,456	141.05	...	174	12,38,490	...	...	...
1868-69.									
Kharif	4,944	344,267	69.63	3,112	110	8,14,631	261	165	2.37
Rabi	4,960	734,132	148.01	...	236	14,50,639	463	290	1.97
Total ... ..	...	1,078,399	217.64	...	346	22,65,320	...	...	...
1869-70.									
Kharif	4,504	341,846	75.9	3,069	111	8,77,886	286	195	2.57
Rabi	4,797	438,560	91.4	...	143	8,79,687	287	183	2.01
Total ... ..	...	780,406	167.3	...	254	17,57,573	...	...	...
1870-71.									
Kharif	3,981	266,693	67.0	3,071	87	7,70,396	251	194	2.85
Rabi	4,618	499,931	108.2	...	163	1,008,971	329	218	2.02
Total ... ..	...	766,614	175.2	...	250	1,779,367	...	...	...
1871-72.									
Kharif	4,180	232,688	55.7	3,078	76	6,66,082	216	159	2.86
Rabi	4,203	373,867	89.0	...	121	7,59,793	247	181	2.03
Total ... ..	...	606,555	144.7	...	197	14,25,875	...	...	...
1872-73.									
Kharif	5,164	247,191	47.8	3,228	79	7,06,060	227	136	2.85
Rabi	4,575	437,979	95.7	...	141	8,68,379	279	190	1.93
Total ... ..	...	685,170	143.5	...	220	15,74,439	...	...	...

The total area irrigated in 1873-74 amounted to 177,241 acres.

In the canal accounts, as now revised, a new item appears to the credit of Enhancement of land-revenue. the canal under the head of "increased land-revenue," and it will be well to give here the departmental expla-

nation of the term.¹ "When the settlement of a district is revised, and it is found that the land-revenue has been enhanced by the action of the canal, whether by increasing the irrigated area over that irrigated at the previous settlement, or by enabling waste land to be cultivated, the amount of the enhancement is credited to the canal, but only as a book transaction, and not by regular transfer. It will be understood that this indirect revenue can only be credited from the time at which the assessment under the new settlement comes in force, and it cannot be increased until the agreements under that settlement terminate, and another settlement is made. It follows that the rate of enhanced revenue will be very unequal in different districts. When the settlement of a district is completed before the canal system has become fully developed, the amount of enhancement due to the canals is very small compared with that obtained in a district over which the canal-irrigation has had time to spread; and what is of more importance than the mere paper credit to canals, the actual loss to Government in the postponement of the increased land-revenue till a future revision of settlement, is often very great in the former case. This is well exemplified by the cases of the portions of the Sahāranpur District watered by the old established Eastern Jumna Canal, and the Bulandshahr District, where the settlement was completed just after the opening of the Bulandshahr Branch, when the canal-irrigated area was about one-fourth of its present average. In the former tract the rate of enhancement, calculated on the area irrigated in 1870-71 (taken as being an average year), was 15 annas per acre, in the latter only 4·3 annas."

The mode and nature of the assessments under this head vary with the peculiarities of each district, and will be found in the settlement reports; they are too technical and too incomplete for reproduction here. Up to the end of 1872-73 the assessments in six districts had been completed, those for Muzaffarnagar, Etā and Etāwa were partially complete, and those for Agra and Cawnpore had not been commenced. The following table shows the amount of enhancement due to the action of the two great canals, as far as has been ascertained, to the end of 1872-73:—

District.	Amount of enhancement.			Remarks.	District.	Enhancement credited to Ganges Canal.	Remarks.
	Ganges Canal.	Eastern Jumna Canal.	Total.				
	Rs.	Rs.	Rs.			Rs.	
Sahāranpur ...	15,263	64,106	79,369	Complete.	Aligarh ...	88,066	Complete.
Muzaffarnagar,	53,500	60,000	1,13,500	Incomplete.	Farrukhabad,	10,410	Ditto.
Meerut ...	79,458	45,781	1,25,239	Complete.	Etā ...	12,439	Incomplete.
Bulandshahr,	33,418	...	33,418	Ditto.	Etāwa ...	27,751	Ditto.
					Mainpuri ...	23,965	Complete.

¹ Irrigation Report 1871-72, p. 23.

These figures would show a credit of Rs. 3,44,270 to the Ganges Canal and Rs. 1,69,867 to the Eastern Jumna Canal for the year 1872-73 under the head of "increased land-revenue." The amounts actually credited in the Controller's accounts are Rs. 2,76,681 and Rs. 1,23,075 respectively. Some years must elapse before the credits under this head can be finally adjusted.

During the year 1866-67 the whole available stream of the Ganges at Hardwar was turned into the canal from November until March, and but for the exertions of Major Forbes much difficulty would have been experienced in providing the supply required for irrigation. The average discharges during the same year were 4,391, 4,781 and 4,582 cubic feet, giving respectively returns per cubic foot per second of supply of 42.35, 93.86 and 138.52 acres irrigated for water carried in the canal. When the mean volumes passing through the terminal escapes are deducted from the volumes of supply, the results are 47.56, 115.73, and 155.19 acres per cubic foot per second of supply delivered into distribution channels. The same discharges applied to the water-rate give returns per cubic foot per second of Rs. 116.68 for the *khari*, and Rs. 186.92 for the *rabt* of 1866-67, and Rs. 306.86 for the year, taken on gross volumes, and Rs. 131.0, 208.9, and 343.7 on the net volumes after deduction of the escape water. The canal ran for 308 days in 1866-67, being closed for 27 days in August for repairs. The following table, prepared from the results of two observations made on the 1st March, 1864, with the gauge at 6.83 ($D=4, 346$), and in the 27th April, 1864, with the gauge at 7.25 ($D=4, 720$), shows the discharges at the Rurki bridge gauge, on which the calculations of the canal department are based:—

Gauge reading.	Discharge, cubic feet per second.	Gauge reading.	Discharge, cubic feet per second.	Gauge reading.	Discharge, cubic feet per second.	Gauge reading.	Discharge, cubic feet per second.
Feet.		Feet.		Feet.		Feet.	
8.0	5,387	7.1	4,607	6.2	3,873	5.3	3,183
7.9	5,301	7.0	4,522	6.1	3,795	5.2	3,109
7.8	5,216	6.9	4,438	6.0	3,717	5.1	3,035
7.7	5,130	6.8	4,355	5.9	3,639	5.0	2,961
7.6	5,045	6.7	4,273	5.8	3,562	4.9	2,887
7.5	4,957	6.6	4,192	5.7	3,486	4.8	2,815
7.4	4,869	6.5	4,112	5.6	3,410	4.7	2,743
7.3	4,781	6.4	4,032	5.5	3,334	4.6	2,673
7.2	4,693	6.3	3,952	5.4	3,258		

In 1867-68 an alteration was made in the water-rates, by the transfer of gardens and orchards from the first to the second class, whereby they became chargeable twice

1867-68.

a year if watered in each harvest. The following water-rates were then in force :—

Class.	Nature of crop.	Per acre irrigated by		Per
		Natural flow (<i>tor</i>).	By lift (<i>dál</i>).	
		Rs. a. p.	Rs. a. p.	
I.	Sugar-cane	5 0 0	3 5 4	Year.
II.	Rice, tobacco, opium, vegetables, gardens, orchards, and water-nuts	3 0 0	2 0 0	Crop.
III.	All <i>rabi</i> crops, indigo, cotton,	2 4 0	1 8 0	Ditto.
IV.	All <i>kharif</i> crops not specified above	1 10 8	1 0 0	Ditto.

Taking these classes, it will be useful to show the influence of the canal in promoting the cultivation of the better class of crops. The following table gives the proportion of each class to the total area irrigated :—

Year.	Class I.	Class II.	Class III.	Class IV.
1864-65	9.20	5.05	84.08	1.67
1865-66	10.50	5.35	78.15	6.00
1866-67	7.30	6.54	83.38	2.78
1867-68	10.86	8.94	78.29	2.41
1868-69	5.63	5.45	77.71	11.21
1869-70	8.70	7.25	76.64	7.41
1870-71	9.82	5.15	82.13	2.90
1871-72	10.24	6.44	82.08	1.24
1872-73	9.98	6.55	81.90	1.57

Taking the principal crops for each year the acreage was as follows :—

Season.	Crop.	1865-66.	1866-67.	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.
Annual kharif.	Sugar-cane	59,416	46,338	55,232	60,664	67,897	75,288	63,125	69,421
	Cotton	16,196	12,091	5,617	44,413	40,631	21,391	13,005	7,901
	Indian-corn	15,628	6,518	1,764	31,209	23,550	689	479	579
	Indigo	47,713	70,487	75,084	75,506	128,336	110,070	118,309	128,780
	Rice	23,134	30,639	36,366	43,355	41,754	28,459	21,309	20,702
	Miscellaneous	18,254	10,002	10,459	59,321	39,718	24,045	13,743	13,713
Rabi	Barley	116,257	121,126	89,156	242,354	123,144	125,635	92,990	152,061
	Gram	19,844	29,397	13,274	39,395	25,981	15,725	11,029	17,183
	Wheat	232,422	273,315	231,659	418,228	204,371	333,511	140,169	242,480
	Miscellaneous	14,061	19,012	15,329	33,505	25,924	25,009	20,044	25,007
Total	Annual	59,416	46,338	55,232	60,664	67,897	75,288	63,125	69,421
	Kharif	118,128	130,612	129,906	203,904	274,039	91,416	170,598	178,701
	Rabi	300,555	443,754	343,319	724,132	438,500	499,890	373,812	497,055
	Year	573,129	614,711	533,157	1,078,100	789,106	769,011	606,555	685,170

The great increase in water-rate during the year 1868-69 was due to the excessive drought of that year, to the increase in the volume of water sent into the canal, and to an improvement in the duty done by the water. Much attention was devoted during this and successive years to the calculation of the volumes of water passing certain points on the canal. The loss by absorption and gain by percolation are two disturbing elements in the estimate which no amount of accurate measurement at the points of entry and exit will eliminate. The information, therefore, given in a previous table must be considered as barely approximate. It is useful in showing, as far as can be ascertained, what duty is being obtained from canal water in each year, and any marked deviation ought to be capable of explanation.

The following table shows the mode of irrigation, whether by lift or flow, Flow (*tor*) and lift (*dā*) for crops remaining all the year on the ground (annual), rain-crops (*khari*), and spring crops (*rabi*):—

Year.	Crops.				Year.	Crops.			
	Annual.	Kharif.	Rabi.	Total.		Annual.	Kharif.	Rabi.	Total.
1865-66.					1869-70.				
Lift ...	2.8	4.85	29.02	36.67	Lift ...	2.46	8.45	19.08	29.99
Flow ...	7.4	15.76	40.17	63.33	Flow ...	6.21	26.66	37.11	70.01
Total ...	10.2	20.61	69.19	100	Total ...	8.67	35.11	56.19	100
1866-67.					1870-71.				
Lift ...	1.92	4.43	25.75	32.1	Lift ...	2.12	5.35	20.94	28.41
Flow ...	5.38	17.67	44.95	67.9	Flow ...	7.70	19.62	44.27	71.59
Total ...	7.30	22.00	70.70	100	Total ...	9.82	24.97	65.21	100
1867-68.					1871-72.				
Lift ...	2.46	3.92	25.39	31.77	Lift ...	2.17	5.52	18.97	26.66
Flow ...	7.90	20.43	39.90	68.23	Flow ...	8.07	22.60	42.67	73.34
Total ...	10.36	24.35	65.29	100	Total ...	10.24	28.12	61.64	100
1868-69.					1872-73.				
Lift ...	1.56	8.36	24.09	34.01	Lift ...	2.46	5.60	23.78	31.84
Flow ...	4.07	17.93	43.99	65.99	Flow ...	7.52	20.50	40.14	68.16
Total ...	5.63	26.29	68.08	100	Total ...	9.98	26.10	63.92	100

At the commencement, the falls were utilised as a motive power for mills for grinding corn. The Kankhal mills, with twenty sets of stones, and those at Asafnagar, Chhataura, Salá-

Mill rents.

war and Bhuipa, with four sets each, were opened in 1855; and in the early part of 1856, Bahádurabad, with eight sets of stones, and the mills at Belra, Mahmúdpur, Janli, Dásna, Palra, and Semra, each with four sets of stones, were put up for public competition. During the first two years the mills were worked under the direct management of the canal officers, as a temporary necessity, to exhibit their working capacities; but afterwards, as was usual on other canals, they were put up to auction to the highest bidder. In the early part of 1857 a rumour was circulated that the flour ground at these mills had been mixed with bone-dust by the orders of Government, and all work was at once stopped on them. The revenue in 1867-68 amounted to Rs. 26,908, or nearly two per cent. on the total income of the year, but even this is very small, when one considers that at the time the motive power available on the Ganges Canal was equal to the power of one million horses.

In the earlier years of the canal the transit dues were chiefly collected from boats working for the canal itself or the contractors employed on it. The principle on which the dues were finally established was that the whole private carrying trade of the canal should be placed in the hands of private individuals, under a system of licenses graduated according to tonnage. In addition to the actual dues brought forward to credit during 1855-56, the canal authorities claim Rs. 15,461 as savings to the cost of the works by the use of the canal for transit during that year. The development of navigation dates from November, 1856, when stations were established at Sardhana, Bulandshahr, Baranta, Dannahar, and Cawnpore. In the early part of 1857, a brisk trade was carried on, but towards the end of April navigation began to decline. At the breaking out of the mutiny there were 144 boats on the canal; the greater portion of these were either sunk by the rebels after plundering the goods they carried, or allowed to drift away. During 1857-58 navigation almost ceased, but in the following year it rapidly improved, and numbers of boats were built, both for the carriage of passengers and for merchandise. There are three serious impediments to canal navigation: the first is due to the great velocity of the current, which renders towing up-stream a serious work; the second is the silting up of the locks in places, and the third is the periodical closing of the canal for repairs, during which time both the boat and the boat's crew must remain idle. The navigation trade consists of either rafting timber or carrying merchandise in boats. The rafting is almost entirely confined to the upper portion of the canal, the timber being seldom carried farther down than the point nearest to Meerut, through occasionally it sometimes goes as far as Baranta, in the Aligarh District, and even Cawnpore. The direction of the grain traffic varies with the market rates. The metals and building materials are chiefly carried for the Rurki Workshop or other Government works. Cawnpore, Baranta, Nánú, Tátarpur, Rurki and Jawálápur are the principal

landing and shipping gháts. Mandakhera, Murádnagar, and Sikandra Rao are of less though growing importance. The following table gives the traffic returns for four years, all that are necessary to show its character :—

Goods.	1867-68.		1868-69.		1869-70.		1870-71.	
	Number	Muns.	Number	Muns	Number	Muns.	Number.	Muns.
Grains ...	...	37,581	...	3,26,148	...	105,039	...	75,160
Cotton ...	...	1,36,662	...	96,027	...	115,756	...	129,365
Oil-seeds ...	...	12,439	...	4,523	...	24,416	...	10,788
Salt ...	...	28,666	...	22,620	...	9,477	...	23,310
Metals ...	...	5,470	...	54,248	...	37,212	...	73,309
Building materials ...	...	1,91,466	...	5,07,557	...	2,46,149	...	98,123
Other goods ...	215,949	68,903	243,047	81,982	...	79,837	...	76,490
Bamboos ...	2,039,675	...	4,021,573	...	1,893,772	...	2,556,870	...
Small timber ...	108,241	...	202,806	...	1,96,540	...	150,417	...
Firewood ...	...	226,297	...	183,910	...	2,70,204	...	210,511
Logs ...	2,954	...	2,669	...	2,525	...	1,840	...
Other timber ...	16,158	249	22,378	...	18,832	...	6,174	...
Passengers ...	10,147	...	979	...	3,004	...	2,139	...
Total ...	2,450,427	753,739	4,493,162	1,277,015	31,042	...	40,360	...
Revenue ...	33,227	...	35,484	...	...	...	31,042	...
Expenditure ...	12,169	...	12,881	...	30,670	...	9,318	...
Net income ...	23,049	...	25,903	...	372	...	...	...

The expenses attending the repairs of the nineteen locks on the canal were first debited to the revenue from navigation in 1869-70, reducing it so much that this branch of the canal, though supporting 487 boats, barely covered its expenses during that year. In 1861-62 there were 616 boats on the canal, but these fell to one-half on the opening of the railway in 1863, and since then, though there have been some fluctuations, the numbers have never risen so high. The following table gives the revenue, less refunds, and the numbers of boats plying on the canal for a series of years :—

Year.	Revenue.	No. of boats.	Year.	Revenue.	No. of boats.	Year.	Revenue	No. of boats
	Rs.			Rs.			Rs.	
1861-62 ...	55,725	616	1865-66 ...	20,949	296	1869-70 ...	33,593	329
1862-63 ...	46,834	313	1866-67 ...	33,119	597	1870-71 ...	30,890	282
1863-64 ...	35,376	286	1867-68 ...	33,218	460	1871-72 ...	59,306	233
1864-65 ...	41,248	243	1868-69 ...	38,784	487	1872-73 ...	29,815	239

The returns under the head of "miscellaneous" consist of the sale of grass and fuel and the rent of small portions of canal lands, besides fines and similar items. At an early period canal plantations were made, which in a few years began to form an

Miscellaneous revenue.

important feature in the miscellaneous revenue. In 1866-67 the income from this source amounted to Rs. 45,983 and the expenditure to Rs. 29,980. The number of trees alive at the close of the year (31st March) 1866-67 was 1,222,726, of which 785,294 were on the canal banks, 325,795 on rájbaha banks, and 111,637 in separate plantations; there were also 150,745 seedlings in nurseries. In 1868-69 large sales were effected in the Meerut Division to the Dehli railway and Meerut Division of the Public Works Department, whilst the felled timber was replaced by young saplings from the nurseries. The canal banks have an area of about 15,000 acres capable of being utilised for this purpose, and now bear nearly two and a half millions of trees and seedlings. The greatest number is found in the Meerut Division of the canal, and next to this come the Bulandshahr, Aligarh and northern portions of the first circle of superintendence. Strange to say, the luxuriant grass on the banks of the canal brings in nearly as large a revenue as the timber. The receipts from all sources during 1872-73 shows:—From grass, Rs. 21,760; firewood and timber, Rs. 30,404; fruit, Rs. 3,708; plants, Rs. 106; and land rent, Rs. 3,312,—or a total of Rs. 58,294.

The whole of the canal plantations have for some years been placed under the superintendence of an officer, called the Inspector of Canal Plantations, who reports yearly on their management. Systematic forestry is practised with much success, and the plantations are being gradually fenced in with agave and other similar plants, whilst increased attention is devoted to the production of trees of rapid growth producing timber useful for firewood and general purposes, such as *siras*, *shisham*, *klkar*, *sirsi*, *paphri*, and the beef-wood tree. The seeds are usually sown in drills, or, where wanted, about five feet apart, and subsequently thinned out. Some efforts are, however, now being made to plant out the more valuable though slow-growing timbers, such as mahogany, teak, *tín*, *bákli*, &c. *Sál* has been tried, but with little success, and it is proposed to confine operations in this direction to the left bank of the canal, leaving the right for the quick-growing acacias. Very much yet remains to be done, and activity in the direction of planting trees deserves every encouragement, even if the plantations supplied the wants of Government works alone. The great increase in the price of firewood and timber of every description presses heavily on the people, and leads them to cut down the groves around their villages, and thus in a measure assist in the denudation of the face of the country, which already has had a serious effect upon the rain-fall.

FAMINES.

A brief summary of the accounts that we possess regarding the famines and droughts that have visited these provinces will form a fitting pendant to the irrigation chapter, and an introduction to the local history of the famines to

be found in each district notice. It will also save much repetition hereafter.¹

Famines. One of the earliest famines of which we have any record is that noted by the pious Zia-ud-din Barani,² which occurred in the reign of Firuz Shah Khilji. The dearth was due to the scarcity of rain, and grain rose to one *jital* per *ser*. In the 1291 A.D. Sewalik country the scarcity was very much felt.

"The Hindús of that country came into Dehli with their families, twenty or thirty of them together, and in the extremity of hunger drowned themselves in the Jumna. The Sultán and his nobles did all they could to help them. In the following year there was abundant rain." This calamity and a storm that occurred about the same time are attributed by the chronicler to the Sultán having caused the execution of one Sídi Maula, a religious fanatic, an event which occurred in 690 *Hijri* (1291-92 A.D.) The price of grain as fixed by Ala-ud-din Khilji about 1300 A.D. was wheat 72 *jitals* per *maund*; barley, 4; rice, 5; *másh*, 5; *moth*, 3; and *nukhud*, 5 per *maund*. I cannot say what the weight of the *ser* and *maund* of either time expressed in our weights would be, but the purchasing power of the *jital* fell, if we calculate 20 *ser*s to the *maund*, from four *ser*s to one *ser*; or if the *maund* contained forty *ser*s as at present, from eight *ser*s to two *ser*s.

We next have the long continued distress of Sultán Muhammad bin Tughlik's reign. He ascended the throne in 1325 A.D., and one of his first acts was to increase the revenue by from five to ten per cent. He invented oppressive *abwábs* (cesses), which were collected so rigorously that the cultivators (*raiyats*) were reduced to beggary.³

Circa 1327-35 A.D. The rich turned rebels, the lands fell out of cultivation, and even the inhabitants of distant districts, hearing of the fate of the cultivators in the Duáb, betook themselves to the jungle. A fatal famine took place in Dehli and the Duáb. Grain became dear, and a scarcity of rain made the suffering general. "It continued for some years, and thousands upon thousands of people perished of want. Communities were broken up and families were reduced to distress." The Emperor was then at Multán, and on his return to Dehli found the famine so severe that man ate man. "The Sultán strove to restore cultivation and had wells dug, but the people could do nothing. No words issued from their mouths, and they continued inactive and negligent. This brought many to punishment." Shams-i-Siráj, writing some time after,⁴ says:—"In the reign of

¹ The authorities are Girdlestone and Henvey's Reports, the Native Histories, Board's Records, and Colonel Baird Smith's report. ² Dowson's Elliot, III. 145, 591. ³ Elliot, *ibid*, III. 232, 245, 619. ⁴ *Ibid*, 345. Ibn Batuta was an eye-witness of this famine. He says the *muund* of wheat rose to sixty *dirhams* and more. "One day I went out of the city to meet the *vazir*, and I saw three women who were cutting in pieces and eating the skin of a horse which had been dead some months. Skins were cooked and sold in the markets. When bullocks were slaughtered, crowds rushed forward to catch the blood and consumed it for their sustenance. Provisions were supplied to every one for half a year at the rate of one pound and a half, Mughribi weight, each."

Alā-ud-dīn the necessities of life were abundant through excellent management; but, through the favour of God, grain continued cheap throughout the reign of Firūz Shah (1351 to 1388 A.D.), without any effort on his part." Wheat sold in Dehli at eight *jīṭals* per *maund* and gram and barley at half that price. A camp-follower would give his horse ten *seers* for one *jīṭal*. "If, occasionally, prices rose from bad seasons or from scarcity of rain, and reached one *tanka* per *maund*, it was only for a short time. The good fortune of the Sultān prevailed, so that no dearth occurred. Such was the prosperity that, throughout the Duāb, from the hill of Sakrūdih and Kharla to Kol, not one village remained waste, even in name, nor one span of land uncultivated. In the Duāb there were fifty-two pergunnahs flourishing, and a similar state of prosperity prevailed elsewhere. The like prosperity prevailed in every *hief* (*ikṭa*) and district (*shikk*). Thus, in the District of Sāmāna, there were four prosperous villages within one *kos*, and the inhabitants were happy and free from care."

In 1398-99, A.D. after the departure of Timūr, the neighbourhood of Dehli and all those territories over which his army had passed was visited by famine and pestilence. Many died of sickness and many perished with hunger, and for two months Dehli was desolate.¹ In 1424 A.D., Yahya bin Ahmad² relates that the royal army was in Katehir, and was about to cross the Ganges towards Kanauj, "but there was a terrible famine in the cities of Hindustān, and consequently the army advanced no farther." In 1471, owing to the wars between the Lodi Sultāns of Dehli and the Sultāns of Jaunpur, the lower Duāb and Bundelkhand, which suffered most from the contending armies, were the scene of much suffering and want. In 1631 a famine³ arose from a similar cause in the Dakkhin, where the armies of Shahjahan were employed during the two previous years; but in this case scarcity of rain, added to the destruction caused by war, produced a state of things where money could not purchase bread, and "disease followed famine, and death ravaged every corner of India." During the reign of Aurangzeb in 1661, famine,⁴ caused by extraordinary drought, ravaged the environs of Dehli and the upper Duāb.

The year 1739 is marked by scarcity caused by the irruption of the Afghāns from Kābul, and here it may be said that a similar result followed all their subsequent invasions. The Sikh invasions, too, produced an artificial scarcity hardly less severe than that caused by a failure of the periodical rains. The famine of 1770 was chiefly confined to lower Bengal, though from a letter of the commandant of the Allahabad Fort it would appear that there was a considerable rise of prices in the lower Duāb. To a demand for a supply of grain for the famine districts below Patna

¹ Dowson's Elliot, IV., 36.

² *Ibid*, 61.

³ Elphinstone, 507.

⁴ *Ibid*.

he replies :—" I am sorry it is not in my power to comply with your directions. The quantity I have been able to collect to the present time would be barely sufficient to support the garrison a month in case of necessity, and the prospects of getting more are very distant. Though the inhabitants are not in such distress here as in the provinces, yet grains of all sorts are immoderately dear." The North-West, however, felt the full force of the next great famine, the *chālīsa* (fortieth), so called from the *Sanvat* year 1840 (1783-84 A.D.), in which it took place. For the two previous years the rains were unfavourable, and the third year opened with an entire absence of rain in *Asārāh* and *Sāwan* (June-July). The next month passed with clouds, but no rain. The fields remained untilled, and the full force of the calamity fell at once upon the tracts removed from artificial irrigation. Towards the end of September the rains began, and with such an equal and regular fall that it is said that grain which had lain in the ground and had not germinated for the previous two years, then came to the surface. Agra first gave signs of distress, and crowds emigrated towards Oudh. "Death left its mark freely along the road.¹ Such was the general apathy that the bodies were not removed from the spot where they lay, even in towns or villages. No relief was held out to the sick or dying. Every man's hand was against his neighbour, and the strong ruthlessly seized the portion of the weak, for the struggle to maintain life overcame all scruples." The famine was severely felt in Benares, where Warren Hastings was himself an eye-witness of its effects. He writes :—"The distresses which were produced by the long-continued drought unavoidably tended to heighten the general discontent * * *. From Buxar to the opposite boundary I have seen nothing but traces of complete devastation in every village." Mr. Rose, of Cawnpore, says that, comparatively with the duration of each, the devastations of the *chālīsa* famine were not so dreadful as those of 1837-38. Colonel Baird Smith held a different opinion, and Mr. Keene² quotes an old follower of the Goshāin leader, Himmāt Bahādur, as saying that wheat sold in 1783-84 for eight *seers* for the rupee; "which, allowing for the subsequent fall in the value of money, is equivalent to a rate of three *seers* for our present rupee." This famine was undoubtedly very severely felt in the middle Duāb as far as Meerut; in Etāwa, Aligarh, and Bulandshahr many mounds are still shown which once formed the sites of villages devastated during the *chālīsa*.

Turning to the Board's records we find mention of a famine in 1803-04. This was most severely felt in the Duāb, though at the same time it caused an extensive rise in prices from the Benares Division on the south to Rohilkhand on the north. This famine, like most others, was mainly due to a failure of the periodical rains, and partly to the disturbing influence of the political changes that then occurred. The *rabi* or

¹ Girdlestone's report, 8.

² Moghul Empire, 140.

spring crops in the middle Duáb were injured by hail storms in the early part of 1803; the rains, too, were scanty in the beginning, and failed about the middle of August. Up to the middle of September the rain-crops had more or less failed, and there was considerable anxiety felt about the spring harvest of 1804-5. These fears were partially realised, for the cold-weather rains also failed. The Government lost by suspensions during this famine alone upwards of thirty lakhs of rupees, most of which Mr. Girdlestone thinks, with justice, must be due to the famine alone.¹ The crops in the upper Duáb yielded an average outturn in 1805-6, but in the following year, the rains, though at first favourable, broke off on the 21st August, and the rain-crops proved generally light, and in many parts which had not the advantage of well water totally unproductive. Similar disasters from like causes took place in the years 1810 and 1812.

In 1813-14, however, a scarcity deserving the name of famine took place throughout the middle and lower Duáb and Bundelkhand. In Agra the rain crop of 1812 was bad, and the spring crop of 1813 was still more scanty. The rains of 1813, also, were late; and though large advances for the purchase of grain for seed were made, numbers of people deserted the district for other parts of the country. "Many died from hunger, and others were glad to sell their women and children for a few rupees, and even for a single meal." Though the Board of Revenue had offered to remit as much of the revenue as was thought necessary, the Collector hoped that the rainy season might turn out more favourable than it did, and the result was heavy balances in 1814. In Cawnpore, also, the drought was severely felt, grain selling at prices that it had not reached in 1803-4. Aligarh and Etáwa showed a considerable increase in the prices of necessaries, though whether this was due to the drought or to the export of the home stocks one can hardly say. It was in Bundelkhand, however, that the calamity was most felt. The western parganahs of Hamírpur had, in addition to the drought, to bear the raids of the free-booters who at that time harassed the border districts; and though this tract of country for a short time had some rest, it had never entirely recovered from the years of suffering it had previously passed through. Remissions were granted here as elsewhere, and altogether, amongst the minor famines, that of 1813-14 must be regarded as a costly one. Bundelkhand suffered exceedingly in the scarcity of 1819, and though this time relieved from the attacks of professed bandits, it suffered equally at the hands of the revenue authorities. Mr. Waring's settlements and the drought combined, reduced the people to great distress, and compelled again a sacrifice of revenue, which some supervision and foresight might have rendered unnecessary.

In 1824-25 drought was severely felt over the upper Duáb, and in the following year both Rohilkhand and the middle Duáb as far as Agra felt its effects. It

¹ Report, 22.

is the same story of inquiries, grants of advances to stave off the present distress, and total inability to grasp the real remedy of a catholic system of canals, which took many years and the sacrifice of hundreds of thousands in men and money to impress upon Government. 1834-35 and 1833-34, repeated the scenes of previous years, and Bundelkhand again felt a real famine. Mr. Pidgeon, writing of the British Districts says:—"The season of 1241 *fasli* (1833-34) was one of unparalleled distress to the people of this district (Hamirpur) and of loss to Government. The miseries of famine, pestilence, and exile which denuded this district of nearly one-half its inhabitants are too well known to the world to need recapitulation here; but it is not equally well known that, in addition to all this, the avarice and corruption of the native officers of this district were employed in frustrating the charitable intentions of Government." By far the greater portion of the remissions were collected and embezzled by the native Sub-Collectors. The balances amounted to about sixty-six lakhs of rupees and the remissions to nearly two lakhs during this famine. Between this and the disastrous year 1837-38 nearly sixteen lakhs of revenue were remitted on account of bad seasons.

The year of famine best remembered, and of which we have authentic records, is the year 1837-38. As this is one of the important famines, the district details will be given at length in the district notices, and here it is merely necessary to present a general view of its influence on the province. In July, 1837, the premonitory signs of the approaching storm were shown from Saharanpur on the north to Behar in the south, and from Lucknow to Gwalior. Baniyas closed their shops, the peasantry took to plunder, the cattle starved and died, violence to person and property was rife, and there was a general move amongst the population, each one thinking any other place must be in better circumstances than his own. Notwithstanding every effort on the part of the local authorities, disorganisation increased and the land remained in a state of chaos. Wells dried up, grass perished, the very trees were despoiled of their leaves to feed the remnant of the cattle. Lord Auckland, then Governor-General, left Calcutta, and assumed charge of the Local Government from Sir Charles Metcalfe in the beginning of 1838, and sanctioned the employment of the starving poor on relief works. Still hundreds of thousands perished from pure starvation, the roads were strewn with the dead and dying, and pestilence followed in the wake of famine. Mr. Rose's account of Cawnpore will be found at some length under the notice of that district, and will serve to show what the general suffering must have been. Between the months of January and July, 1838, his relief works were attended by nearly a million of people; burglaries and thefts were double the number that were before recorded; the receipts from excise fell to nearly one-half; and the balances of the land-revenue amounted to more than the collections.

Between the years 1837 and 1839 Government remitted close upon forty-nine lakhs of rupees on account of this drought, and balances still remained amounting to nearly thirty lakhs, most of which was subsequently written off. The loss of life was estimated by Colonel Baird Smith at 800,000 souls by hunger and pestilence; the loss of cattle, equally great, crippled the resources of the survivors. Mr. Girdlestone estimates the direct remission of revenue at ninety lakhs of rupees, besides over five lakhs of rupees expended by Government in gratuitous relief, and two lakhs of rupees supplied by private benevolence. So great was the prostration that followed this calamity that more than twenty years elapsed before the revenue regained its former standard, and the loss thus entailed is calculated at 133 lakhs of rupees, or, if all be added together, over two millions sterling in these provinces alone.

The famine of 1860-61 comes next on the long list of famines caused by droughts in these provinces. From 1858 there
 1860-61. had been nothing but a series of bad seasons and more or less failures of the crops until, in 1860-61, the crisis came. Up to the middle of July, 1860, no rain had fallen, the people were driven to the use of wild fruits and grass seeds for sustenance. Between the 15th and 20th of July rain fell, but held off again, and with the exception of the week from the 11th to the 17th of August, and a few days in September, no more fell. Relief works were opened all through the upper Duáb and Rohilkhand, subscriptions were collected, and, as usual, efforts were made to relieve the distressed. By the end of July, 1861, nearly ten millions of souls had received food at poor-houses at a cost of over $4\frac{1}{2}$ lakhs of rupees, giving a daily average of 63,245 persons fed, and a daily expenditure of Rs. 3,102. Large numbers died, and the loss of cattle also was severely felt. Sir A. Cotton estimated the deaths from starvation and pestilence at 200,000, and Colonel Baird Smith estimated the deaths of cattle in the poorer districts to amount to one-half of those in existence. The balances amounted to $13\frac{1}{2}$ lakhs of rupees, of which about two and a half lakhs were remitted, but to this must be added as dead loss the sums expended in the distribution of food, in the purchase of seed and cattle, and in relief works, swelling the minimum actual tangible loss to over $20\frac{1}{2}$ lakhs of rupees. It is unnecessary to give further details of this famine, as it will be carefully noticed under each district.

The last famine that I have to record is that of 1868-69, which was felt
 1868-70. throughout Rohilkhand, the Duáb, and more especially in the Jhansi Division. The immediate cause of the scarcity was the failure of the rain crops of 1868. There was a heavy fall of rain in June, succeeded by a month of dry weather, and again in July another heavy fall, succeeded by a similar interval of dryness. The result was, that

the crops were destroyed where beyond the influence of artificial irrigation. The *rabi* (or spring) crops of 1869 suffered to a great extent both from drought and hail-storms, and hardly yielded two-thirds of an average season. Prices consequently rose, and much distress was felt all over the country. Relief measures were promptly organised, and the poor-house system of administering assistance to the weak and aged was adopted. Benefiting by the experience of previous years, the principles and details of the arrangements to be adopted were sketched out beforehand, and when it was found necessary to commence operations every one knew exactly what he had to do. The black districts were mapped out into convenient circles and placed under special superintendence. Works of permanent utility, such as roads and tanks, were commenced, to find employment for the able-bodied poor, and poor-houses afforded shelter to the aged and infirm. Women who, by the custom of the country, were not used to appear in public received yarn for weaving, or cotton to spin into yarn, and were thus made, in some measure, to contribute to their own support. Each large gang was further subdivided and separately huddled near the places where their services were required. Native medical officers were told off to inspect each circle and prevent, as far as possible, any loss of life by the outbreak of epidemics. The principles on which the relief operations were based commend themselves in that they have been found successful in actual practice, and give a test as to how far the pressure of a scarcity exists. Those found capable of labour were obliged to labour, and received wages in money somewhat below the average, but sufficient when exchanged for food to support life. Where poor-house relief was asked for, residence within its walls was enforced, and rations were distributed in cooked grain, whilst a light kind of work was demanded from each one that was pronounced fit for it. It is manifest that no able-bodied man would willingly work for famine wages unless real scarcity existed, nor would a residence in a poor-house be endured for the mere sake of escaping work elsewhere. The records, too, show that the numbers on the relief works and in the poor-houses increased with the pressure of the distress, rising with bad weather and high prices, and falling with the commencement of agricultural operations, that gave hopes of a favourable harvest.

To carry out the scheme of charitable relief, the public were called upon to subscribe, and a committee was formed in Allahabad to regulate the collection and the distribution of the funds. Rs. 2,30,295 passed through their hands, but, subsequently, Government took upon itself the whole care of the really helpless, and the functions of the committee ceased. Altogether over four and a half lakhs of rupees were expended in charitable relief, of which about two and a half lakhs were furnished by Government. Balances amounting to over thirteen lakhs accrued, and of this sum about two and a quarter lakhs were remitted

altogether. Again, over eighteen lakhs were expended on works of public utility in connection with the relief of the able-bodied poor, and over ten lakhs in advances for the construction of wells and the purchase of seed-grain and cattle. The total cost in actual cash of this famine may be approximately shown thus :—

<i>Total expended on—</i>			<i>Government Share.</i>		
		Rs.			Rs.
Labour relief ...	...	18,61,020	..	...	13,37,621
Charitable relief ...	...	4,50,381	...	...	2,48,946
Loss by remission ...	...	2,20,000	...	...	2,20,000
Agricultural advances ...	...	10,16,202	...	...	10,16,202
		<hr/>			<hr/>
		35,47,603			28,22,769
Add compensation to lessees of ferries and East Indian Railway for losses ...	...	...	...	...	3,50,086
					<hr/>
				Rs. ...	31,72,855

These figures do not show the loss caused by the check given to the progressive increase in the material prosperity of the districts attacked, or that caused by the abandonment of the claim to a share in the increased profits from the land which would otherwise have been made. These matters are mentioned in the district notices, where further details are given. One thing can be learned even from the very short sketch of the famine history that I have given, and that is, that a famine is an expensive luxury for an Indian Government to indulge in, quite independent of moral and humanitarian considerations; in fact, from the lowest standpoint, it is a thing to be, at all risks, avoided. Accordingly, whatever measures are found useful in preventing, or at least mitigating, the evil effects of a season of drought should be adopted: these are, briefly, the extension of the canal system; the more liberal grant of advances for the construction of wells and reservoirs in places where canal irrigation is at present impracticable; and the provision of efficient means of communication between every district that is likely to be attacked and the great grain depôts of these provinces. Of the inestimable advantages of the canals in mitigating the effects of a season of drought the history of the year 1868-69 is a proof. Double the acreage irrigated in 1861 then received water, whilst 1861 was itself more than four times ahead of 1837-38. At the same time, the chapter on sanitation will show that in years of famine the canals have saved life, their evil effects on the drainage system have been so prejudicial to the public health that it may be fairly asked whether the account is not balanced.

M E T E O R O L O G Y .

The suggestion of taking meteorological observations¹ of a systematic and connected kind seems to have been due to Mr. Edmonstone, when he was Lieutenant-Governor of these provinces. The plan of taking the observations was partly drawn up by Colonel (now Major-General) Cunningham, R.E., who was the Secretary to Government in the Public Works Department, and Captain (now Colonel) MacLagan, R.E., who was then Principal of the Thomason College in Rûrki. Mr. Edmonstone had proposed that these observations should be taken as early as April, 1859, but it was not until September, 1862, that observations began to be recorded, and towards the close of the same year their publication was commenced as a weekly supplement to the *Government Gazette*. The number of observatories at first established was six, and they were at the following places:—Naini Tâl, Rûrki, Agra, Beawar (in Rajputâna), Jhansi, and Benares. In 1865 the instruments at Beawar were transferred to Ajmer, and those at Naini Tâl were, in 1870, sent to Rânîkhet.

About the beginning of 1865 Government called on the Principal of the Thomason College for a report on these observations, and as Dr. Murray Thomson was in charge of the observatory at Rûrki, the duty of drawing up this report devolved upon him. A first report was published in August, 1865, in which all the observations made in 1863 were brought together and abstracts of them tabulated. A second report followed in January, 1866; in this the observations of 1864 were treated, and those of 1865 were the subject of a third report published in April, 1866. In February, 1866, Dr. Thomson was appointed Reporter on Meteorology for the North-Western Provinces. This was the first appointment of the kind made, but it was followed immediately by the appointment of Assistant Surgeon Neill as Reporter for the Panjâb, and in 1867, Mr. H. T. Blanford was made Reporter for Bengal. These appointments were the result of suggestions made by the Asiatic Society of Bengal. In their proposal a more extensive scheme of meteorological observation was sketched out than has as yet been sanctioned. The scheme in its present form was approved of by the Government of India on the proposal of the Sanitary Commissioners of Bengal, to whom the subject had been referred for consideration and report.

After Dr. Thomson's appointment as Reporter, he obtained authority from the Government of India to ask for copies of the registers kept in regimental hospitals and civil dispensaries, and in reply received registers containing the observations made from the beginning of 1866 from twelve stations, and afterwards five more stations sent registers from the beginning of June, 1866. There were, thus, twenty-three stations at which observations were

¹ From notes by Dr. Murray Thomson.

made: twenty of these were in the North-Western Provinces and three in the Province of Oudh. Ultimately this number was reduced to fourteen, one of which is in Lucknow, and the other thirteen are in the North-Western Provinces. In all these stations there is a proper observatory shed for the reception and exposure of the instruments, and a staff consisting of a superintendent, who is in many cases the civil surgeon of the station, and a native observer. Both of these now draw pay, the superintendent having an allowance of Rs. 30 a month, and the observer Rs. 25, with an increase of Rs. 5 every year until a maximum of Rs. 40 a month is reached. This improved scale of pay came into operation in 1873.

The following are the observatory stations at present in existence in these provinces:—Chakrāta, Rānīkhet, Dehra, Rūrki, Meerut, Bareilly, Fatehgarh Agra, Allahabad, Gorakhpur, Benares, and Jhansi. The North-Western Provinces Government bears the expense of all these observatories except Dehra, which is maintained by the Great Trigonometrical Survey. The instruments kept at each observatory are at least a mercurial barometer, dry and wet bulb hygrometer, maximum and minimum thermometer for use in shade, maximum solar and terrestrial radiation minimum thermometers, and a rain-gauge. A few have, in addition to these, anemometers and other instruments. It is intended, however, that all should in time be equally well equipped.

From each of these observatories a register is sent to the Reporter every month, and the register embraces the state of the pressure, humidity and temperature of the air, as ascertained by the reading of the barometer, hygrometer, and thermometer at 4 and 10 A. M. and 4 and 10 P. M. every day. The amount of cloud in the sky, direction of the wind, and general state of the weather are also noted at these periods. The self-registering thermometers, rain-gauge, and anemometer are read once a day. Mean air-pressure, temperatures, &c., are taken, as a rule, from the average of the four readings as described above, and are not the average of the maxima and minima only. It is the duty of the Reporter to prepare an abstract of these observations every month, and to accompany this abstract with notes on the course of the pressure, temperature, &c., of the air during the month, with comparisons as to previous years. These abstracts and notes are published in the *Government Gazette* generally in the last week of the month succeeding that to which the observations refer. An annual report is also prepared, in which much of the monthly reports are reproduced and published along with tables of comparative air-pressure and temperatures, and the weather and meteorological phenomena are fully discussed. But no report which embraces only a tract like the North-Western Provinces of India will ever illustrate fully the causes of such important matters as deficient or excessive rain-fall, for the periodical rains of India proceed from causes which operate over a much larger part of the earth's surface, and no

adequate explanation will ever be given of these until places over the whole continent furnish their quota of observations, and those be discussed by one writer.

As the office of Reporter on Meteorology is but of recent origin, it possesses no records of meteorological occurrences in far back years. And since the office has been in existence there has been very little to record of a more than usually remarkable kind. The following are all that appear worth mention here:—On the night of the 6th of June, 1867, a very severe dust-storm passed over Agra, which did some damage to trees and buildings. Besides this there has been several storms of minor magnitude, but none approached any way near to what might be called a cyclone. On the 28th of June of the same year a fall of muddy rain took place. It was noticed on the same day in Rûrkî and in Naini Tâl, and a short account of it was published in the report for 1867. The year 1868 was remarkable for the deficient rain-fall. It was not only in the North-Western Provinces that the rain was short of the average, but likewise over a great part of the Panjáb and Rajputána. The details of the observations made will be found under the notices of the observing stations.

COMMUNICATIONS.

The East Indian Railway runs through the Aligarh, Bulandshahr, and Meerut Districts, and branches off from Gháziabad to Dehli. From Gháziabad the Sindh, Panjáb, and Dehli Railway runs through the remainder of the Meerut District northwards, and on through Muzaffarnagar and Saháranpur to the Panjáb. The Oudh and Rohilkhand Railway communicates with the Duáb lines at Aligarh. The water communication by the Ganges Canal and the navigable rivers, the Jumna and Ganges, is fairly complete. The principal trade-routes commencing on the north are the lines by the Mohand pass to Mussooree (Mansûri), and by the Timli pass to Chakráta. By Hardwár a line follows the left bank of the Ganges to the great shrines of Kedárnáth and Badrináth in British Garhwál, and, by the Niti and Mána passes, communicates with Tibet. On the east, arterial lines connect Bijoor with Saháranpur and Muzaffarnagar; Morádabad with Meerut, and by Anúpsahr with Bulandshahr; whilst Bareilly is in direct communication with Aligarh. Through the centre of the Duáb, the Grand Trunk Road runs through Háthras, Aligarh and Bulandshahr to Dehli. Main lines connect all the principal towns with each other and the lines on either side of the Duáb. To the west, Umballa (Ambála) is connected by Jagádri with Saháranpur, and again by Karnál and Shámli with Muzaffarnagar. Pánipat and Rohtak are each in direct communication with the Duáb, and further south, lines converge upon Dehli from all parts of the Duáb, and through Khair and Tappal upon Palwal. The means of communication are, therefore, nearly complete, and, with the exception of isolated portions of the Saháranpur, Buland-

shahr, and Aligarh Districts bordering upon the low lands of the great rivers, are amply sufficient for all purposes of trade and the conveyance of grain in seasons of scarcity. In fact, there is, perhaps, no portion of British India better supplied with the means of communication than the five districts noticed in this volume. The existence of extensive kunkur beds renders the metalling of roads here an easier and far less expensive task than in other less favoured districts.

POPULATION.

Amongst the 4,860,228 souls comprising the population of the five districts noticed in the present volume, it has been already stated that 3,840,321 are Hindús, 1,045,780 are Musalmáns, and 1,378 are Christians. Some further brief remarks are necessary as an introduction to the local details given under the district notices. Commencing with the Hindús, I find that 442,787 persons are entered as Brahmanas, and of these 281,009, or more than one-half, belong to the great Gaur subdivision, and next to them in numbers come the Saraswats and Sanádhs. Though a numerous and powerful body, none of the Brahman clans possess much political influence. The Gaurs are equally numerous in the Bijnor, Morádabad, and Muttra Districts, but further south are replaced by the great Kanaujiya subdivision. Rajpúts number 261,970 souls. In Saháranpur, the characteristic clans are the Pundírs, numbering 14,843 souls, and the spurious Chauhán Rajpúts. In the neighbouring district of Muzaffarnagar the same clans show the largest numbers, and next to them comes the Chhotiyána clan. In Meerut the Chauháns number 17,207 souls, and next to them come the Tuár, Gahlot and Bhál clans, whilst in Bulandshahr the Badgújars (13,116), Jádons and Chauháns form the characteristic elements of the Rajpút population. Bais, Bhál, Gahlot, Chandel, Bagola, Jaiswár, and Jaromiya Thákurs are also tolerably numerous in Bulandshahr. In Aligarh the Jádons predominate, numbering 36,423 souls, or nearly one-half the entire Rajpút population. Chauháns here, too, are numerous (15,408), and with Kirárs, Pundírs, Badgújars, Gahlots, and Jangháras make up the majority of the remainder of the Rajpút population.

Baniyas number 247,345 souls, of whom 145,579 belong to the Agarwál division alone. The remainder are chiefly Saraugis or Jainas, Gindanriyas, Bishnois, Chansainis, Dásas, and Bárahainis. They are a wealthy, money-getting class, and have during the British rule attained to positions as land-holders, which may at some time be the cause of grave political anxiety. The great mass of the population, entered in the census returns as "other castes," number 2,858,219 souls. To these belong the Aheriyas, who number over 7,000 souls in Aligarh. The Ahírs, so numerous from Meerut southwards, number 64,507 souls. Then come the Banjáras, chiefly to be found in Saháranpur, Muzaffarnagar, and Ali-

garli. The Barhais, or carpenters, number over 67,000 souls, and similarly numerous are the great castes following domestic service or trades, such as the Lohárs or blacksmiths, (20,594); Dhobís or washermen (25,957); Darzís or tailors (13,729); Ohhípís or cloth-printers (12,722); Hajjáms or barbers (73328); Mális or gardeners (58,504); and Sonárs (53,883). The characteristic class amongst the labouring population is the Chamárs, who number 777,308 souls, or more than one-fifth of the entire Hindu population. Garariyas or shepherds form an important element in the same class, and number 84,060 souls. Gújars, Tagas, and Játs, described more at length under the Sahárunpur, Muzaffarnagar, and Meerut Districts, respectively, form the characteristic elements amongst the cultivating village communities. The Gújars number 188,251 souls, the Tagas 76,979; and the Játs 370,361. Other important castes are the Juláhas or weavers (29,932); Káehlís (22,060); Kahárs (162,593); Kaláls (20,379); Kayáths (18,907); Khákrobs or sweepers (156,321); Khatíks (46,156); Kolis (72,023); Kunhárs (75,434); Lodhas (101,483); Orhs (26,360); and Sainis or Súnis in the three northern districts (51,995). The mendicant classes are fairly represented by the Bairágis, who number over 13,000 souls; the Gosháins (15,289), many of whom have taken to agricultural pursuits; and the Jogis (39,976).

The Musalmán population presents some difficulties in the way of classification. So many converts from Hindúism are entered under the head of Shaikhs that it may be considered, at least in the upper Duáb, as a generic term for all who profess Muhammadanism, and do not belong to the well-known classes of Mughal, Pathán, or Sayyid. The returns show 410,267 persons as Shaikhs, and to these may be added the 483,635 Musalmáns entered without other specification than religion. Sayyids number 35,984 souls, or more than any other division except Rohilkhand, doubtless due to their presence so long and in such numbers in the Bárha tract of the Muzaffarnagar District. Mughals number 9,030 souls, chiefly in Meerut and Muzaffarnagar, and Patháns give 71,686 persons, pretty evenly distributed over all the five districts. In no part of those provinces have the Musalmán missionaries been so successful in making converts. There are few classes of Hindús, whether Brahman, Baniya, Rajpút, Gújar, Taga, or other caste, that are not divided into a Hindu and Musalmán branch. Much of this is, no doubt, due to the fact of the proximity of this portion of the Duáb to Delhi, and the attractions of the court. In Sahárunpur alone the returns show 9,395 Musalmán Gújars, and over 12,000 Musalmán Rajpúts. In Bulandshahr the Musalmán Badgújar and other Rajpúts number 7,811 souls. In Sahárunpur again Musalmán Tagas are numerous, and in Bulandshahr and Aligarh Musalmán Mewátis are found. It is under the unspecified and classes entered as Shaikhs that the majority of the Hindu converts are found, and, on the whole, they cannot be

put down at less than from one-half to two-thirds of the entire Musalmán population, a remarkable proof of the success of unscrupulous propagandism in India.

The population is distributed amongst 7,508 villages, containing 1,015,037 houses, or a number of houses to the square mile ranging from 88 in Sahárum-pur to 114 in Meerut, and inhabitants to each house ranging from 4.4 in Muzaffarnagar to 5.1 in Bulandshahr. About nine per cent. of the population occupy houses built by skilled labour; the remainder are satisfied with the ordinary mud-built huts. About forty per cent. of the entire population, or 2,019,011 souls, are engaged in occupations connected with agriculture, and keep under cultivation 6,830 square miles of land. The land-revenue amounts to Rs. 76,87,398, or with cesses Rs. 85,65,190; the former falling at the rate of about Re. 1-14-0 per cultivated acre. The cultivated area distributed amongst the male adult (above fifteen years of age) agriculturists would give an average holding of about six and a half acres to each person, for which he pays close upon Rs. 3-8-0 an acre, and has to support about three persons by his exertions. It is not to be argued from this that the peasantry of the upper Duáb are badly off; they are wealthy when compared with the southern districts and the Benares Division, but still they have, like all their brethren, to live from hand to mouth, and, with the exception of the industrious Játs, Gáras, and Tagas, there are few that have or indeed are able to lay by anything for times of distress.

GEOLOGY.

The geology of the North-Western Provinces is separable¹ into three divisions, corresponding to three distinct geographical regions. Twenty-three of the thirty-five revenue districts are entirely on the Gangetic plains. On the north, three districts (Dehra Dún, Garhwál, and Kumaon) belong altogether to the Himálayan region. Out of nine districts on the south, seven are in a very large proportion covered by the plains-deposits; three only being in whole or in great part within the rock-area of the Peninsula of Hindustan. It is at once apparent that these geographical divisions are also strictly geological; and it may be here stated that no identification or relation has as yet been made out between the rocks on the north and on the south of the plains.

The middle region naturally claims first attention. It is often spoken of as "the alluvial plains of the Ganges," or such like expressions. In a general sense these terms are admissible; there is no doubt that the materials forming the plains were conveyed by the Ganges and its tributaries. But in this range of meaning the Siwálík deposits might claim to be included, for it has been shown that they, too, were accumulated through the existing Himálayan drainage system. Confining the word alluvium to its strict geological meaning—to ground subject to flooding from the very elements that now exist, the alluvial ground of the North-Western

¹ By Professor H. B. Medlicott, Geological Surveyor.

Provinces becomes very small. It is necessary to specify still further to bring out the distinction to be made in the area under notice; the word "alluvium" is scarcely understood unless as applied to fine deposits from tranquil inundation, —and it applies to such indiscriminately; whereas the point to be indicated is, what ground is undergoing increase from any form of deposition, and on what ground abrasion is in permanent action, or in other words, where river action is formative and where it is destructive. A very large proportion of the plains-area is permanently undergoing denudation: the main rivers run through it in confined and fixed channels, the flood-waters being well below the general level of the country. Several considerable streams, as the Hindan, take their rise within this area, and though subject to local overflow, with deposition of alluvium, must on the whole carry away annually a large quantity of earth. The fixed channels of the great rivers are of very variable width, and are generally bounded by steep high banks. The deep course of the river oscillates within the larger channel; the whole of the latter being liable to inundation from the floods.

"*Khádír Matt*" is as near as possible the native equivalent for the English 'alluvial land.' But though there is always a large

The *Khádír*.

total area of alluvial land in the *khádírs* of the great rivers, it is possible that, on the whole, these *khádírs* are undergoing denudation—that the new alluvial land formed by the changes of the river may be progressing lower than the older patches removed by the same process. There are no data for settling the point: it can only be stated that the fall of the rivers through this province is greater than that at which silt-carrying rivers become on a large scale depositing rivers, that the current here seems able within the year to carry off all the silt it receives. Below Ghazipur, on the border of the provinces, the fall of the Ganges lessens, and the river becomes on a large scale formative, great tracts of country being subject to inundation from it. It has not yet been defined how much of the eastern districts come under this or that condition of fluvial action. The whole of the Province of Oudh would come under one or other of them.

Independently of such tracts as come within the sub-deltaic region of the great rivers, there is a considerable stretch of country

Recent deposits.

where the drainage is formative. The minor streams from the outer skirt of the mountains do not run on into the plains in deep channels, but through the deposits of earlier times, and flow, at least for many miles, in broad shallow and ever-shifting beds formed of their own deposits. The load of shingle, gravel, sand, and earth washed into these torrents by the heavy rain-fall off the precipitous sides formed of the soft conglomerates, sandstones, and clays of the Siwálík hills, is far more than the current can carry into the great rivers. Something of the same kind no doubt takes place in

these rivers also : the quantity of large shingle brought by them to the mouth of their gorges is certainly not carried much further ; but for the rest, the clear water issuing for the greater part of the year from the gorges seems to carry off any excess deposited thereabouts in time of flood. The clear water becomes quite muddy soon after entering the *khádir*. There is thus along the northern margin of the plains a broad belt of ground, the formation of which is strictly recent. The upper portion of it, having a steeper slope than the rest, is chiefly composed of shingle and gravel with a filling up of sand and earth. This is the forest-bearing zone known as the "*bhábar*." Except in the rainy season the

The *Bhábar*. *bhábar* is devoid of water, streams of considerable volume soon sinking into the porous ground, to

reappear (at least in part) along the lower fringe of the coarse deposits. From the cause just mentioned, this outer zone, though having on the whole a considerable slope (greater than the general slope of the plains) is especially watery and swampy : it is well known as the *Tarái*. In the Jumna-Ganges

The *Tarái*. *Duáb* the formation process is especially active owing to the greater development here of the soft upper

Siwálik rocks, which are the most abundant sources of detritus. The *Tarái* in this *Duáb* is scarcely a noticeable feature, owing probably to the good natural drainage ; the watershed being here 400 feet above the Ganges at *Hardwár*. Eastwards from the Ganges the *Tarái* becomes more and more distinct ; and in the same direction remnants of an ancient *bhábar* deposit become frequent and of increasing elevation, till in the far east, at the base of the *Sikhim* *Himálaya*, they stand at 1,000 feet over the actual torrents. To the south of the plains some analogous cases of recent deposits may be found, but they are altogether insignificant, the large rivers there also running in channels which they do not overflow to any extent. The phenomena under notice have been only incidentally examined, so that the sketch here given is very incomplete and open to correction.

It having been shown that the great mass of the plains-deposits belong to a bygone phase of formation, it devolves upon the geologist to ascertain the age and nature of that same.

Pliocene deposits.

Very little progress has as yet been made to that end, the systematic study of the question not having been taken up. Some have maintained that the deposits are marine or estuarine ; others, as seems more likely, that they are purely fluvial, by a process precisely like what is now going on in the Lower Provinces. No trace of marine organism has been discovered in them. But some bones of terrestrial mammalia were found in a hard bed of calcareous gravel in the bed of the Jumna near *Etáwa*, and which seem to belong to species or varieties now extinct, so that these deposits will probably take rank among the later tertiaries. From observations made in sinking wells along the line

of railway, one of the engineers has stated the ground section in the Duáb to be as follows, viz., loam 35 feet, blue silt 30 feet, strong clay 20 feet, resting on a water-bed of reddish sand, from which the water rises some 30 feet. The appearance of salts to a very deleterious extent in the water and as an efflorescence in many parts of the country has been an object of anxious enquiry, especially as it seems on the increase. The source of the mischief has not yet been determined: it may be altogether due to the great evaporation with insufficient surface drainage.

There is more variety for the geologist in the rocky regions north and south of the plains. In Kumaon and Garhwál the Himálayan region. boundary of the province extends up to the great snowy range, the frontier of Tibet. West of the Ganges, the District of Dehra Dún (including Jaunsár) comprises only a small portion of the Lower Himálaya. There is much uniformity in the arrangement of the Himálayan rocks, of which one may make three great divisions. The youngest of these includes the tertiary epoch, ranging from the nummulitic age to the Miocene Siwálíks.

Sub-Himálayan series. It has been named the Sub-Himálayan series, as principally forming the lower ranges flanking the mountains.

In it, again, three well-marked physical stages have been described. In point of elevation the order of sequence of these has been reversed, the oldest being highest, and the youngest lowest. This has not taken place by inversion nor yet (it has been argued) by upheaval in steps, through faulting. Appearances are best explained by the supposition that, during successive periods of elevation, an irregular scarped line of erosion was weathered out along the newly-raised strata (like the present cliffed face of the Siwálik hills), and that against this as a boundary the newer groups of deposits were accumulated, just as we see the *bhábhar* slopes of the present day. As would result from such a process, the oldest group has been most exposed and has suffered most from denudation; only remnants of it are left along the flanks of the higher hills. The typical area,

Lower group. in which all the sub-divisions of this group are seen, lies to the west of the Jumna; the hill stations of

Kasauli, Dagshai, and Subáthu are on these rocks. The lowest member of the series consists at its base of brown clays with limestone and fine sandstone, passing up into thick red clays and strong sandstones. The age of the lower portion is well characterised by abundant nummulitic fossils. Only a very small remnant of those beds has been noticed in the North-Western Provinces; it occurs on a gap of the ridges bounding the eastern Dún, close above Rikhi-kesh and just north of the village of Bhawan. The middle group of the series

Middle group. is largely developed in the hills immediately at the base of the mountain range, as spurs of which they might be hastily described; but their distinctness as a range is well marked by a line

of low gaps and of open longitudinal valleys along the geological boundary, the drainage passing through the range by narrow gorges. These features may be well seen under Mussooree. From Rájpur to the Ganges this flanking range has been removed, but east of the Ganges it appears again in great force, continuing so up to the Nepál frontier. The strata are well exposed along both roads up to Naini Tál. They consist principally of very massive grey sandstone (very like the molasse of Switzerland), with subordinate bands of clay. The small nests of lignite found at many places in the sandstone have more than once given rise to exaggerated hopes, and even to confident statements, as to the existence of coal. The fine hematite iron ore of Dehehauri, near Kálidhúngi, is only a local concentration of the iron oxide which occurs so finely disseminated as an ingredient of the clays. This middle member of the series has been called the Náhan group, from the chief town of Sirmor.

The youngest member of the sub-Himálayan series is the Siwálik group, so called from the name given to the outermost range of hills by the authors of the well-known Fauna Sivalensis. These hills are much lower than those of the middle group, from which they are generally separated by the broad longitudinal valleys known as "*déhus*." These are structural features, not mere valleys of denudation; the form of disturbance of the strata is very regular, broad "normal" anticlinal flexures, the axis-plano sloping towards the mountains: the hills have been weathered out along the axis of the flexure, and the *déhus* lie on the flat northern slope. The original Siwálik hills are that well-defined portion of the range between the Ganges and the Jumna, separating Dehra Dún from the plains. From a short distance east of the Ganges the range is broken and scarcely recognizable, having probably been denuded off and covered up, if indeed it had ever been so prominent as to the west: the *bhábar* deposits often reach up to the base of the minor range. The Páthi Dún is an irregular valley of denudation in these hills of the Náhan group. The lower part of the Siwálik group is very like the Náhan group in composition, save that the sandstone is softer and fresher. At the top there is great thickness of conglomerate, both earthy and sandy. The physical separation between the Siwálik and the Náhan groups has recently been clearly made out; but the distinction was, unfortunately, not observed in the collection or the description of the great series of fossils formerly procured from this region. The vast majority, if not all, of the large mammalian remains were obtained from the younger group: some vertebrate fossils were found in the Náhan rocks, but were confounded with the rest. A very interesting point—the comparison of the two faunas—was thus lost.

The second great rock system to be noticed consists of an unknown thickness of slates, limestones, and sandstones forming the first range of the mountains from end to end.

The slate series.

The stations of Chakráta, Mussooree, and Naini Tál are on this range. The strata are greatly contorted, although preserving a strike approximately parallel to the mountain range ; and the order of the several bands of rock has only been vaguely suggested. The only fossils certainly known to have been procured from them were some casts of indeterminate bivalves from a band of limestone in the gorge of the Tál river, at the east end of the Dehra Dún. The lead mines of Sirnor and Subáthu are in these rocks. Trappean intrusions occur in many places.

The remaining rock system is that of the metamorphic and crystalline rocks with intrusive granite, forming the greater part of the broad zone of the outer or lower Himálaya, up to the snowy range. The junction of these rocks with the slate series is well marked in the valley north of Naini Tál. There is a large mass of intrusive granite near Almora. Copper ores occur at many places and are worked by the natives. They have not been favourably reported on by European mineral-viewers. There are many fine bands of rich iron ore, but the inaccessibility of the ground prevents their being extensively used. Impure graphite is found in several places.

The boundaries of the plains on the south are on the whole irregular although the arrangement and relations of the rocks are very simple. There are here but two rock systems deserving more than mere mention, the great Vindhyan series and a crystalline series. The Vindhyan represents a whole epoch in the geology of Hindústan, and are divided

into an upper and lower series, each having several groups. Both of these series are fairly represented in the Mirzapur District. The plateau between the Ganges and the Són is formed of upper Vindhyan rocks, principally of the Kaimúr group ; and in the Són valley the lower Vindhyan are well seen. From the eastern edge of the provinces, in Mirzapur, the upper Vindhyan are continuous right away to Agra, but in great part through Native States ; the northern scarp forming approximately the boundary of the North-Western Provinces throughout the Districts of Allahabad, Bánda, Lalitpur, and Jhansi. There is a break here, Sindia's territories running up to the Jumna, but further to the north-west, a ridge of Vindhyan sandstone, of the Bhaurer group, on which stands the famous ruins of Fatelipur Sikri, runs to within a few miles of Agra city. The upper Vindhyan consist of strong bands of sandstone alternating with strong bands of shales, in some of which limestone occurs. Along the boundary in Bánda, Lalitpur, and Jhansi, the bottom beds rest undisturbed upon the crystalline, having for the most part completely over-lapped the lower Vindhyan, of which only a narrow and broken strip is exposed between Kirsir and the Dhasán. The lower Vindhyan are made up of limestones, sandstones and shales, a characteristic variety of which has porcellaneous and trappoid aspects.

Throughout their immense area in this part of India the Vindhyan strata are quite undisturbed, except along the south margin, as in the Són valley, and again along the north-west boundary, as in the ridge of Fatehpur Sîkri. The direction of disturbances in this latter position is parallel to that of the Aravali system, of which it is probably only a secondary and reflex effect. The Vindhyan rocks have given great disappointment to geologists in not having as yet yielded any fossil remains. It is only known through their stratigraphical relations to the Indian coal-bearing rocks that they can be at latest of middle palæozoic age. The sandstones of the Vindhyan afford everywhere admirable building stones.

The crystalline rocks only appear to any extent in lower Bundelkhand, in the wide bay formed by the Vindhyan scarps; principally in the Districts of Lalitpur and Jhansi, occupying the head of the bay, and to a less extent in Jalaun, Hamîrpur, and Banda, where the outcrops through the plains-deposits become less and less frequent. The rock is chiefly gneiss, often granitoid. The strike of the foliation and bedding, when observable, is generally east and west. Greenstone dykes are of frequent occurrence, with a prevailing north-west to south-east direction. But the most remarkable feature of this area is the number of great quartz-rocks. They have a prevailing north-easterly run, but exceptions are frequent. They stand up in abrupt wall-like ridges, sometimes over 300 feet high, many yards wide, and running perfectly straight for several miles continuously or appearing again on the same strike. They seem to be of earlier date than all the trap-dykes, and are often highly impregnated with steatite, and otherwise displaying metamorphic characters. It might be thought that gold should be found in or about these great quartz-rocks, but there is no trace or tradition of its occurrence.

The other rocks, of which more mention may be made, occupy a few square miles in British Singrauli, the southern division of the Mirzapur District. On the entrance south there is gneiss, part of the great gneiss area of Behar and Bengal. Between this and the lower Vindhyan there is a band of sub-metamorphic rocks, principally clay-slates. South of this band, and resting on the gneiss, there is a small patch of this coal-bearing rock, the eastern extremity of the south Rîwâ basin. From the Kota mine in Singrauli was derived all the coal that for many years used to be taken on pack-bullocks across the Vindhyan plateau to Mirzapur.

FISH.

Attention was directed to the fisheries of India in 1867, and Dr. Day was appointed to report on the fish of these provinces as well as the rest of India. His report was published

Fish-economy.

in 1873. He divides the fish into those of the hills and those of the plains. Amongst the more important of the plains species is the *maháser* (or carp), which lives in the rivers of the plains during the cold months, when the hill-streams are too small and too cold to afford proper sustenance. During the rains the *maháser* migrates to the hills, and ascending some distance up the colder waters of the larger rivers, turns aside for breeding purposes into their warm side-streams. These side-streams, unreplenished by snow-water, are the natural breeding-places of most of the more valuable fish of the carp family residing near such places, and anything that interferes with them whilst there, must materially injure the fisheries. A large majority of the young fish remain in the hill-streams until the next rains. The local non-migratory fishes pass up small water-courses and channels, depositing their eggs in irrigated fields, flooded plains, temporarily formed tanks, on the grassy sides of rivers and lakes.

Much destruction is caused by the canals through which large quantities of fish find their way from the hills, but having once entered them, they are unable to return again for breeding, and multitudes perish when the canals are allowed to run dry for repairs. Again, the existence of fixed weirs across the hill-streams, up which large carp proceed to breed, is a fertile source of destruction. These are constructed in Kumaon and Garhwál at the close of the rains, and remain until the next floods. They are placed usually at the tail of each pool, or at the junction of two rivers, and effectually prevent the escape of any fish that has once got above them. Similar contrivances exist on all the small streams within the hills, and the dams made to draw off a supply of water for the small flour-mills are utilised for the same purpose. In the plains, engines, fixed and movable, are also used in the most wasteful way. Some account of the nets and other implements in use will be found in the description of each district, and here it will be useful to give the opinions of the district officials on the question of the necessity for Government interference in the preservation of fish in the Meerut Division.

The Commissioner writes :—"I think it may safely be concluded that the proportion of the population who live by fishing as a trade is not large ; the proportion of persons who have no other occupation than fishing is small, but it is increased by others who resort to fishing at odd times, probably in times when they have nothing better to do. So far, then, as the fisherman class is concerned, I do not think there is much to fear of their efforts making any appreciable impression on the fish-supply. But there is a fear that, unless the reckless system of wholesale destruction is stopped, the fish-supply may become scant. There seem to be two main causes which lead to this wanton destruction of fish : the first is by

reason of the facilities afforded for doing so in the canals and distributary channels, and the second is the absence of any check in respect of rivers." He continues that nets or gratings at the head of canals will be liable to be carried away in heavy floods, so proposes fish-ladders at each fall. "The main points for consideration would be: *first*, to prevent damming streams for the purpose of catching fish; *second*, a limit to the size of the mesh in nets; *third*, a close season, say from first July to first October, seems to be essentially necessary, and catching fish within these dates should be prohibited. The close season need not apply to every kind of fish, but to those more generally used for food. The limit to the size of the mesh of nets would only stop the fry being caught, but the prohibition to damming or diverting streams would also prevent the wholesale destruction which now takes place." "There is no doubt that the most wanton destruction of fish does take place, and that fish are disappearing from the sub-streams of the Ganges and Jumna. Where twenty or thirty years ago fish of ten or fifteen pounds could be caught, none are now to be seen except fry, and such fry the native fisherman net and snare in every way at all seasons.

The Collector of Saháranpur "has no remarks to offer on the subject."

Opinions of Collectors.

The Collector of Meerut (February 22nd, 1872) observed that "there is no question that considerable damage is done to the young fish, by the indiscriminate use of nets with extremely small meshes, without any regard to the spawning season, and in the smaller streams, by the practice freely resorted to by the fishermen and others of damming up the streams, drying off the portion below, and then taking out the larger fish, while the smaller are left to perish. I do not think the establishment of a close season would meet with any opposition. At the spawning season, fish are considered impure and scarcely fit for food, and it is only the very poorest part of the population that makes use of fish at that season. There would be little difficulty in the introduction of a fixed close season, and this would greatly protect the fishing interests. I think a close season from 15th June to 1st November would give a fair time for spawning and the growth of the young fry. The mesh I would recommend should be one inch and a half from knot to knot, or perhaps even two inches. Small rewards for crocodiles' eggs would aid in the extermination of those reptiles, and this could be easily arranged for." The Assistant Collector of Meerut reported that "as little fishing is carried on in the rains, the destruction of brooding fish and fry is not very great. No doubt there is considerable destruction, for all fish, breeding or not, are, when caught, killed without distinction." Difficulties would exist in regulating the minimum size of the mesh of nets, and he is "opposed to Government doing anything, especially as regards fry, because the subordinate native officers and the police being high-caste men among the

Hindu population, it would rest with persons quite unacquainted with distinctions in classes of fish to decide as to what is fry and what is not; while we may be sure that considerable oppression would be exercised." The Collector of Muzaffarnagar (March 29th, 1872) reported, *first*, that there is no limit to the size of mesh employed, but that nets having very small meshes are used mainly for fishing in *jhills* and ponds, and nets with larger meshes for river-fishing; *second*, that nature practically provides a close season for fish during the monsoon; *third*, that the consumption of fish in the district is not excessive, and consequently the destruction of small fry does not appear to take place systematically. "Except occasionally, when fields are flooded in the rains, there does not seem anywhere, or at any time, to be any wholesale destruction of small fry;" he sees no practical difficulty in regulating the minimum size of the meshes of nets, or prescribing a close season, but does not consider such necessary in his district.

Nothing, that I am aware of, has been done to carry out any of these suggestions, or to interfere in any way with the present wanton and wholesale destruction of fish. I give the names of the more common description of fish found in these provinces, with a reference to the page of Dr. Day's report,¹ where they are described at some length. The mammalia, birds, and insects will be found in the next volume, and thus a complete list will be given illustrating the natural history of these provinces.

Sub-fam. TELEOSTEI.

Order AOANTHOPTERYGII.

Family PERCIDÆ, Cuv.

Ambassis baculis, Ham. Buch. *Kunggi*, H. Scales minute. Day, 249.

Ambassis nama, Ham. Buch. *Bhakra, pompiya*, H. Small. Day, 249.

Ambassis lala, Ham. Buch. *Chandi*, H. Scales minute; lateral line absent. Orange, with four or five vertical bands; first dorsal nearly black. Only a few inches long. Day, 249.

Family MUGILIDÆ, Rich.

Mugil cascasia, Ham. Buch. *Kukse, bua*, H. Silvery; uncovered space on chin, eye, base of pectoral, and centre of base of caudal gamboge yellow. Found in Ganges and Jumna. Day, 252.

Mugil corsula, Ham. Buch. *Anwari* of the Ken. D. $4\frac{1}{2}$, A. $\frac{3}{4}$, L. 1, 50, L. tr. 15.

Family Gobiidæ.

Gobius giuris, Ham. Buch. *Gulā*, H. Blotched and spotted with rusty brown. Attains a foot and a half in length. Day, 253.

Family NANDIDÆ, Günther.

Badis Buchananii, Bleeker. *Chiri, kēla pūtiya*, H. Purplish black, banded. Day, 254. Small.

Badis dario, Ham. Buch. Lateral line absent. Colours and size as in last species. Day, 254.

Nandus marmoratus, Cuv. *Gadha, hūlsu, badhal*, H. No pseudobranchia. Day, 255.

Family LABYRINTHICI, Cuv.

Trichogaster fasciatus, Bl. Schn. *Kangi*, H. Greenish, banded, and some of the fins red-spotted. Day, 256. Small.

T. lalius, Ham. Buch. Banded, owing to every scale being half light blue and half scarlet; fins spotted red.

¹ Calcutta, Government Press, 1873.

Family OPHIOCEPHALIDÆ, Bleeker.

Ophiocephalus marulius, Ham. Buch. *Saul, dauila, kabra*, H. Orange, with vertical bands and white spots. Sometimes as long as four feet. Day, 257.

O. striatus, Lacép. *Chota saul, maral*, H. Grey above, whitish beneath, striped with black. Day, 257.

O. gachua, Ham. Buch. *Chabu, dheri dhok*, H. Greenish; pectoral barred; the other fins with orange edgings. Attains a foot in length. Day, 258.

O. punctatus, Bloch. *Gari, phul dhok*, H. Dirty green, banded, and sometimes with numerous black dots over the body. Same size as preceding. Day, 258.

Family RHYNCHOBELLIDÆ, Bl.

Mastacembelus pancatus, Ham. Buch. *Gurchi, jugar*, H. Attains a length of about six inches. Day, 259.

M. armatus, Lacép. *Bahm*, H. Marbled and striped, sometimes with round spots. Found throughout India, even to the Himalaya, attaining two feet and upwards in length. Day, 259.

Order ANACANTHINI.

Sub-order Anacanthini-pleuronectoidei.

Family PLEURONECTIDÆ.

Synaptura pan, Ham. Buch. A species of sole found in the Ganges high above tidal influence. Day, 260.

ORDER PHYSEOTOMI.

Family SILURIDÆ.

Macrones aor, Ham. Buch. *Singhari*, H. Maxillary barbels extend to the end of the caudal fin. Adipose dorsal with a black spot at its posterior extremity. Large cat-fish, attaining several feet in length. Day, 261.

M. lamarti, Cuv. *Tengara*, H. Maxillary barbels extend to the end of the first dorsal fin. A black spot at the posterior end of the adipose dorsal. Found in the upper portions of the Ganges and Jumna, attaining several feet in length. Day, 261.

M. chrysus, Day. *Pila katarni*, H. Barbel scarcely longer than the head. No separate inter-neural shield on the nape. Body golden, a black blotch behind the opercles. Day, 262.

M. carcio, Ham. Buch. *Kagar, katahra*, H. Maxillary barbels reach the caudal fin. Dorsal spine serrated on both sides: adipose fin short. Banded, and having a shoulder mark a few inches long. Day, 262.

M. nangra, Ham. Buch. Maxillary barbels reach the vent. Dorsal spine entire; adipose fin short. Mud coloured, with three vertical green bands. Ganges and Jumna, to two inches long. Day, 262.

M. botius, Ham. Buch. Barbels shorter than the head. Dorsal spine entire. Brown. Length up to six inches. Day, 262.

M. tengara, Ham. Buch. *Tingara*, H. Maxillary barbels reach the caudal. Dorsal spine entire; adipose fin long. Longitudinal bands and a dark shoulder mark. Upper portions of Jumna and Ganges; grows to six inches. Day, 263.

M. camia, Ham. Buch. *Kanya tengara*, H. Maxillary barbels as long as the head. Dorsal spine entire; adipose fin short. Brownish, with two transverse bands across the tail. Grows to six inches. Day, 263.

Pseudotropius atherinoides, Bl. *Pathal, patuhri*, H. Maxillary barbels reach the base of the anal fin. Three or four longitudinal lateral bands. Attains to four inches in length. Day, 265.

P. murius, Ham. Buch. *Bachua*, H. Maxillary barbels reach the base of the anal fin. Attains to eight inches. Day, 265.

P. garua, Ham. Buch. *Bachua, karul*, H. Maxillary barbels reach the ventral fin. Adipose dorsal fin becomes absorbed in the adults. Silvery. Attains a length of one foot. Day, 265.

Callichrous bimaculatus, Bl. *Gangwari, papha*, H. Four barbels, the maxillary reach the middle of the fish. Anal not confluent with the caudal; pectoral spine internally denticulated near its end. A round black spot above the middle pectoral fin. Day, 266.

C. pabda, Ham. Buch. Four barbels, the maxillary reaching to the second third of the anal fin, and not confluent with the caudal; pectoral spine smooth. A black blotch behind the gill-opening. Ganges.

C. Egertonii, Day. *Palawa, palu*, H. Four barbels, the maxillary extend slightly beyond the base of the pectoral fin. Anal not confluent with the caudal; pectoral spine denticulated internally. Numerous brownish blotches cover the body, and a large one exists over the posterior half of the pectoral fin. Day, 267.

Wallago attu, Bl. *Malli, boalli*, H. A voracious feeder; sometimes known as the fresh-water shark. Attains to several feet; is good eating. Day, 267.

Clavus major, Ham. Buch. *Kayga, mágár*, II. Maxillary barbels reach nearly to the end of the pectoral fin; vertical fins not united. Dirty brown colour. Attains to 18 inches, and is considered good eating. Day, 279.

Saccobranchus fossilis, Bloch. *Stangi*, H. Maxillary barbels reach the middle of pectoral, or even the commencement of the ventral fins. Leaden, sometimes with two longitudinal yellow bands. Day, 269.

Ailia Bengalensis, Gray. *Paphta*, Panj. Grows to seven inches. Silvery; some of the fins frequently stained with grey on the edges. The barbels extend to nearly the middle of the length of the fish. Day, 270.

Aillichthys punctata, Day. *Patási, patuwa*, II. Barbels extend to the middle of the fish. Silvery; upper surface of the head nearly black; a large black spot on the base of the caudal fin. Attains to four inches in upper portions of the Jumna. Day, 270.

Eutropichthys vacha, Ham. Buch. *Nimach*, II. Barbels about as long as the head. Silvery; greyish along the back. Grows to a foot. Day, 270.

Hemipimelodus cenia, Ham. Buch. *Paduwa, chetawa*, II. Six barbels; no nasal pair. Attains to five inches. Day, 272.

H. viridescens, Ham. Buch. *Hadda*, II. Greenish brown, with two light green bands; a dark mark on the dorsal fin and each lobe with a similar blotch. Jumna. Day, 272.

Glyptosternum striatum, McClelland. *Nawa, japa*, II. Breadth of head nearly equals the length. Maxillary barbels extend beyond the root of the pectoral. Lips not fringed. Occipital process three times as long as broad. Caudal peduncle nearly twice as long as high. Dorsal spine more than half as long as head. Brown; fins yellow stained with black. Rivers along the base of the Himalayas. Day, 273.

G. telechitta, Ham. Buch. *Tiliya*, II. Head longer than broad. Maxillary barbels extend to the posterior edge of the orbit. Lips roughened, but not fringed. Occipital process three times as long as broad. Caudal peduncle twice as long as high. Fin rays not plaited inferiorly. Dorsal spine two-thirds as long as the head. Blackish brown; fins yellow with black bands. Caudal black, with a yellow edge. Day, 273.

G. modestum, Day. Breadth of the head equals its length. Lips not fringed. Occipital process slightly longer than broad at its base. Caudal peduncle two-thirds as long as long. Fin rays not plaited inferiorly. Dorsal spine half as long as the head. Uniform brown. Attains to three inches. Day, 274.

Amblyceps mangois, Ham. Buch. *Sukhsé, billi, suddá*, II. Head as wide as long. Maxillary barbels reach the end of the pectoral spine. Occipital process rudimentary. Caudal peduncle as deep as long. Olive brown, with a dark line commencing opposite the opercles and dividing into two, one proceeding to the centre of the caudal, the inferior to the base of the anal.

Family. SOMBRESOCIDÆ.

Belone canela Ham. Buch. the pike. *Kanga*, H. Lateral line not keeled. Four or five dark blotches between the bases of the pectoral and anal fins.

Family. CYPRINIDÆ.

Maya modesta, Day. Greenish brown; a blotch below dorsal fin and another at the base of the caudal. Probably from the Himalayas. Day, 277.

Discognathus lantia, Ham. Buch. *Pathar chatta*, II. Four barbels. A dark spot behind the gill-opening, and generally a band along the side. Attains to six inches. Day, 277.

Oreinus sinuatus, Heekel. *Gál-guli, saul*, II. Silvery and spotted; sometimes a few of the spots are red. Attains to two feet in the Himalayas, where it is sometimes called a trout. Day, 278.

Schizothorax Hodysoni, Günther. *Dinawa*, II. Attains to 18 inches in Himalayas and head of the Ganges. Day, 278.

Labeo nuncar, Ham. Buch. Four barbels. Obtained in Gomkhipur.

L. calbasu, Ham. Buch. *Kalaháns or kalabains* H. Four barbels. Attains to four feet.

L. curchins, Ham. Buch. *Kursa, kurchi*, II. Attains to five feet. Day, 279.

L. rohita, Ham. Buch. *Rohu*, H. Four barbels, the rostral sometimes absent. Day, 279.

L. morala, Ham. Buch. Four barbels, Ganges. Attains a length of six inches. Day, 279.

L. ricnorhynchus, McClell. *Gidh*, H. One pair of maxillary barbels. Himalayas. Day, 279.

L. bicolor, McClell. *Gidha, muheli, gatiwa*, H. One pair of maxillary barbels. Himalayas.

Cirrkhina mrigula, Ham. Buch. *Naim*, H. Two barbels; upper lip entire. Attains to three feet or more.

C. gobama, Ham. Buch. *Bahra, tilári*, Panj. Two rostral barbels; upper lip fringed. Attains a length of eight inches.

- C. latia*, Ham. Buch. Four barbels; upper lip fringed. Small.
- C. reba*, Ham. Buch. *Riwa*, H. One pair of short rostral barbels; upper lip fringed or entire. About a foot. Day, 282.
- Cutta Buchananii*, Cuv. *Bawāsa, kutla*, H. Attains to several feet in length, and is good eating. Day, 283.
- Barbus immaculatus*, McClell. No pores or snout. Day, 284.
- B. sarana*, Ham. Buch. *Gidhi, kanli, derhi, pota*, H. Attains a length of two feet.
- B. tor*, Ham. Buch. *Mahāscr*, H. Lips lobed. Day, 285.
- B. chlinoides*, McClell. Grows to eight inches. Day, 285.
- B. choku*, Ham. Buch. *Kuchcha karawa*, H. Six inches in length.
- B. conchoniis*, Ham. Buch. *Kanchun pangti*, H. A black spot on side over anal fin. Day, 286.
- B. ticto*, Ham. Buch. *Kauli, kotri*, H. Rarely exceeds four inches in length. Day, 287.
- B. stigma*, Cuv. *Fatiya*, H. A dark spot near posterior end of lateral line, another across the base of middle dorsal rays.
- B. chrysopterus*, McClell. *Bawāri*, H. Fins black tipped.
- Nuria danrica*, Ham. Buch. *Sumara, mola, mahwa*, H. A black lateral band. Day, 288.
- Rasbora daniconius*, Ham. Buch. *Millaou*, H. No barbels; mostly a black lateral stripe.
- Aspidoparia morar*, Ham. Buch. *Chihwa*, H. Attains up to six inches in length. Day, 289.
- A. jaya*, Ham. Buch. *Fahrwa*, H.
- Rohitee cotio*, Ham. Buch. *Gārdha, chandāla mahni*, H.
- Burilus piscatorius*, Ham. Buch. *Lohāri*, H. Ten vertical bars. Attains to five inches.
- B. modestus*. Day. Back dark; sides silvery. Four inches in length. Day, 290.
- B. shacra*, Ham. Buch. *Gārha*, H. Twelve vertical bars. Five inches. Day, 290.
- B. vagra*, Ham. Buch. Indistinct vertical bars.
- B. barila*, Ham. Buch. *Persi*, H. Fourteen or fifteen vertical bars.
- B. bola*, Ham. Buch. *Gāla*, H. Two rows of blotches. Day, 291.
- B. hoalius*, Ham. Buch. *Hayadi*, H. To six inches in length.
- Danio devario*, Ham. Buch. *Duba, dahriya*, H. No barbels.
- Perilampus atpar*, Ham. Buch. *Moriya*, H. Greenish, with a silvery lateral band. Day, 292.
- P. lauhuca*, Ham. Buch. *Kuncheliya*, H. A black mark above base of pectoral fin. Day, 293.
- Chela bacaila*, Ham. Buch. *Cheliya*, H. Attains to six inches.
- C. gora*, Ham. Buch. *Cheliya* H. Attains to eight inches in length.
- Botia dario*, Ham. Buch. *Buktiya*, H. Barbels eight.
- B. Almorhae*, Gray. Barbels eight.
- Nemacheilus botia*, Ham. Buch. *Gāluwa*, H. Body irregularly blotched. Caudal emarginate. Day, 296.
- N. rupicola*, McClell. *Chital*, H. Eleven to seventeen bands, brown, and wider than the ground colour. Caudal forked. Length $3\frac{1}{2}$ inches. Day, 296.
- N. zonata*, McClell. Eleven to thirteen dark zones encircle the body, not half the width of the ground colour. Caudal forked.
- N. montanus*, McClell. *Lāl muchhli*, H. Twelve vertical brown bands, Caudal forked. Himālayas.
- N. spilopterus*, Cuv. Eleven to fifteen irregular bands. Caudals slightly emarginate. Himālayas.

Family CLOPIDRIDE.

Engraulis telara, Ham. Buch. *Frucha*, Ben. Found in the Ganges. Day, 299.

Family NOTOPTERIDÆ.

Notopterus hapirat, Bonn. *Moh*, H. Attains to two feet or more.

Order PLAGIOSTOMATA.

Sub-order Selachoidri.

Family CARCHARIIDÆ.

Carcharias gangeticus, Müll. Of a grey colour. This savage ground shark attains a length of five feet. Day, 305.

Sub-order BATOIDEI or Rays.

Trygon uarnak, Forsk., and *T. sephen*, Forsk. Both found in the Ganges.

HISTORY.

THE earliest settlement of the Aryan race within the confines of India was in that portion of the Panjáb lying between the Drishadvati (Khagar) and Saraswati (Sarsúti) rivers, to the west of and adjoining the upper Duáb, the Brahmávarṭa of Manu.

Vaidik period.

It was here that the principal personages mentioned in the Vedas lived, and, under the auspices of Saraswati, the goddess of learning, the Vedas and Purāṇas were compiled. The Vedas show us a colony of fair-complexioned strangers settled amongst dark-skinned, rude and uncivilised aborigines. The mode of life of these colonists was simple in the extreme. The head of the family combined in himself the office of priest and chief, and the members devoted themselves chiefly to cultivating the ground and tending cattle. Hence they spread into the Duáb and eastern India. The Solar race gave kings to Ajudhiya in southern Oudh, and colonies to a great part of these provinces. One branch settled in Tirkút and founded the family of the Maithila kings, and another occupied southern Tirkút or Vaisáli (Sáran). The Lunar race sprung from the same stock, and occasionally intermarrying with the Solar line, gave princes to Pratiśthána, a city to the south of Ajudhiya (Ayodhya), to Káshi (Benares), Magadha and Behar; to the Vindhya hills, and across them to Berar (Vidarbha). The earliest princes of Kusasthali, on the Narbada, Dwárka in Gujráṭ, Hastinápur and Muttra, belong to the same race. Though there are hints of settlement in the peninsula, yet these are so indistinct, that it is difficult to say whether they belong to the original works in which they are mentioned or are interpolations of later times.¹

The earliest traditions regarding these provinces are connected with the upper Duáb, and there centre in Hastinápur, the ancient city of the Pándavas, situated in the parganah of Hastinápur in the Meerut District. Few traces of the old city now remain to show what its extent may have been, but universal report points

The Mahábhārata.

out the existing shapeless *kherras* or mounds as the residence of the moon-descended princes of the house of Bhárata, from whom came the actors in the great war mentioned in the pages of the Mahábhārata. With the exception, perhaps, of the Ramáyana, devoted to the achievements of the Solar race, there is no work in India which has had such influence on the Hindu mind as the Mahábhārata. Its legends are as household words, and are used as commonly and naturally in the conversation and writings of the people as the mythical history of Greece and Rome and the narratives of the Sacred Scriptures are quoted in the west. And this is no decaying influence, for up to the present day, the belief is universal that

¹ For a popular and accurate resumé of the facts known concerning the Vaidik and Brahmanic ages, I would refer the reader to Mrs. Manning's (Mrs. Speir) "Ancient India," and for the literature and its history to Max Müller's works.

the perusal, or even listening to the perusal, of the Mahābhārata cleanses from all sin. It is impossible to understand almost any modern popular work written by Hindūs for Hindu readers without at least an acquaintance with the outlines of the story of the Lunar race; so that apart from its historical interest, the records of this great family would appear to demand some notice in the present volume.

Setting aside the miraculous events, which in common with the Iliad and Æneid surround, as with a halo, the births and exploits of the principal heroes,

the residue of the narrative may be accepted as founded on facts. There is nothing unnatural in the circumstances of the dispute between the rival branches of the family of Kuru, and no reason appears for considering the whole as a gigantic fraud perpetrated by the nation at large and permitted to pervade the entire post-Vedic literature of the different Hindu communities throughout India for the purpose of deception. This is not the place for entering into a critical examination of the Mahābhārata, as to whether it is the work of one hand or of many, or what portions have been written soon after the events they record, and what may be considered the interpolations of successive editors. Professor H. H. Wilson places the compilation at no later date than the thirteenth or fourteenth century before Christ, whilst General Cunningham fixes on the end of the fifteenth century before Christ, making the birth of Parikshit to have occurred in 1430 before Christ, six years before the great war.¹

¹ V. P. IV, 232. General Cunningham in Arch. Rep. I, 125. The grounds on which this opinion has been adopted are, (1) Bentley's statement that certain positions of the planets recorded in the Mahābhārata took place in 1824-5 B. C., and there is no year either before or since that period in which they were so situated. (2) The Vishnu Purāna (V. P. IV, 232.) declares that at the birth of Parikshit the seven Rishis (the great Bear) were in Māgha, and the Kāli age then commenced. The Rishis pass through each lunar asterism in 100 years (*Ibid* p. 233, note) and this gives an interval between Nanda and Parikshit of 1,000 years. All the copies of the Vishnu Purāna give 1,015 years; the Matsya Purāna has 1,050 years, and the Bhāgavata 1,115 years. The items, however, recorded in the Bhāgavata make up 1,590 years. Professor Wilson considers the shorter period is best proportioned to the number of kings; for reckoning from Sahadeva, who was a contemporary of Parikshit, there were forty-seven kings, which as the divisor of 1050 (Matsya), gives rather more than twenty-two years to each reign. The duration of the reigns of the nine Nandas will place the birth of Parikshit, according to the Vishnu Purāna, 1,115 years before the accession of Chandragupta (Sandrakottus) in 315 B. C., or 1430 B. C., that is, six years before the great war in 1424 B. C. According to the Matsya chronology the date of Parikshit's birth will be 1465 B. C., and according to the Bhāgavata, 1530 B. C. Colonel Wilford (As. Res. IX., 116) places the conclusion of the great war in 1370 B. C., and Hamilton (Buchanan) conjectures it to have occurred in the thirteenth century before Christ. Colebrooke (I. Misc. Ess., 109, 200) infers from astronomical data that the arrangement of the Vedas by Vyāsa, the substituted husband of the widows of Vichitravīrya, took place in the fourteenth century before Christ. Mr. Bentley (Hindū Astronomy, p. 67) brings the date of Yudhishthira to 575 B. C., but the weight of authority, according to Professor H. H. Wilson, "is in favour of the thirteenth or fourteenth century, B. C., for the war of the Mahābhārata, and the repented commencement of the Kāli age." The popular date for its commencement is 3101 B. C., or the date of Noah's deluge (Mill).

The account given in the Mahábhárata may be supplemented from the genealogical portions of the Puráṇas, which substantially agree with the facts recorded in the great epic.

The Puráṇas.

The Puráṇas are eighteen in number, compiled at different times and by various hands. The Vishnu Puráṇa, which has been translated by Professor Wilson¹ and edited by Dr. Hall, is the principal, and next to the Bhágavata is still regarded as the great authority on matters connected with their religion by large sections of the Hindu community. Professor Wilson attributes its compilation to some time before the twelfth century of our era. According to Amara Sinha, who flourished fifty-six years before Christ, a Puráṇa should contain five books, one relating to primary creation or cosmogony; the next to secondary creation, or the destruction and renovation of worlds, including chronology; thirdly, the genealogy of gods and patriarchs; fourthly, the reigns of the Manus, or periods called *manvantaras*; and lastly, history, giving an account of the Lunar and Solar races, and of their descendants, to modern times. None of the Puráṇas come up to this standard, and the Vishnu Puráṇa only in part; but so much more so than the others, that "it is one of the circumstances which give to this work a more authentic character than most of its fellows can pretend to." Imperfect as they are, and disfigured by absurd stories and interpolations of later times, the Puráṇas, with the great epic poems, are the chief amongst the few historical records we possess of any antiquity to assist us in compiling an account of the heroic age.²

The Lunar race in the Puráṇas are descended from Brahma, who sprang from the lotus forming the navel of Naráyana. From Brahma came Atri, and from Atri, Soma or the moon, whom

The Lunar race.

¹ Collected works, Vols. VI. to X.: London, 1862-71. ² Professor Wilson writes:—"The different works known by the name of Puráṇas are evidently derived from the same religious system as the Ramáyana and Mahábhárata, or from the mytho-heroic stage of Hindu belief. They present, however, peculiarities which designate their belonging to a later period, and to an important modification in the progress of opinion. They repeat the theoretical cosmogony of the two great poems; they expand and systematize the chronological computations; and they give a more definite and connected representation of the mythological fictions and the historical traditions. But, besides these and other particulars, which may be derivable from an old, if not from a primitive era, they offer characteristic peculiarities of a more modern description, in the paramount importance which they assign to individual divinities, in the variety and purport of the rites and observances addressed to them, and in the invention of new legends illustrative of the power and graciousness of those deities, and of the efficacy of implicit devotion to them. Siva and Vishnu, under one or other form, are almost the sole objects that claim the homage of the Hindús in the Puráṇas, departing from the domestic and elemental ritual of the Vedas, and exhibiting a sectarian fervour and exclusiveness not traceable in the Vedas to a qualified extent in the Mahábhárata. They are no longer authorities as a whole; they are special guides for separate and sometimes conflicting branches of it; compiled for the evident purpose of promoting the preferential, or, in some cases, the sole worship of Vishnu or of Siva." (V. P. I, v.)

Brahma installed as the sovereign of Brahmans, plants and the stars. Soma, by an intrigue with Tārā, the wife of Brihaspati, preceptor of the gods, had a son named Budha, who married Ilā, a daughter of the sun. To him was born Pururavas who, by the nymph Urvāsi, had six sons, the eldest of whom was named Ayus. Yayāti, the son of Ayus, had five sons, to whom he severally applied to remove the premature decay under which he suffered owing to the curse of his father-in-law. All refused to undergo the privations of old age except Puru, the youngest, who willingly gave his youth to his father and became an aged man. Yayāti, touched with the piety of his youngest son, subsequently determined to resume his decrepitude. He called all his sons before him and restored to Puru his youth, and distributed amongst them all his kingdom. To Turvasu he gave the south-east of his kingdom, and his posterity ended with Marutta, who adopted Dushyantu of the race of Puru. Druhyu¹ was made prince of the west, Anu of the north, and Yādu of the south. All were directed to govern as viceroys of Puru, who was declared monarch of the whole earth.

Yādu had several sons, and amongst his descendants were Krishna and Balarāma, the allies of the Pāndavas. In the line of Puru came Dushyantu, who was adopted by his cousin Marutta, and had by Sakuntala,² the mighty king Bhārata, the emperor of the entire earth. He is the first great king of the race, and to this day India is known amongst Hindūs as Bhāratavarsha, or the country of Bhārata. Amongst his descendants come Sahotra, the father of Hastin, who founded Hastināpura. Hastin had three sons, the eldest of whom was named Ajāmīlha. The sovereignty of Hastināpura itself remained in the hands of his son Rikshu, who was succeeded by Samvarana. Haryaswa, the fifth in descent from Nila, the brother of Rikshu, had five sons, of whom their father said—"These my five (*pancha*) sons are able (*alam*) to protect the countries," and hence they were termed Panchālas. Even thus early dissensions existed in the family, for we find from the Mahābhārata that the Panchālas expelled their cousin Samvarana from Hastināpur, which was again recovered by his son Kuru, who gave his name to the holy district of Kurukshetra.³ In the Purānas the possessions of the Kauravas and the Panchālas form the middle districts of Bhāratavarsha. To the

¹The sons of Prachetas, the eighth in descent from Druhyu, are subsequently said (V. P. IV., 119) to have been the "princes of the lawless Mlechhas of the north," while the Mahābhārata calls them "Vaibhojas, a people unacquainted with the use of carts or beasts of burthen, and who travel on rafts; they have no kings." As king of the south-east he should rule over Arakan and Ava, but many authorities derive the nations of the peninsula also from him (*Ibid.*, 117.)

²The legend of Dushyantu and Sakuntala has been dramatised by Kālidasa in his beautiful poem of Sakuntala, or "Sakuntala recognized by the ring," the scene of which is laid in the Bijoor District. (Ed. Williams: Hertford, 1855.)

³Near Thanagar.—Cunningham, Ane. Geogh, 331.

Panchála. Panchála family belonged Drupada, in whose reign their possessions were divided. Drona,¹ with the assistance of the Pándavas, conquered the entire kingdom, and then ceded the southern portion to Drupada. Panchála at this time would seem to include the entire tract of country to the north and west of Dehli, from the Siwalik (Shiwálak) hills to the Chambal. In the southern portion, the principal cities were Makandí on the Ganges, and Kámpilya or Kampil in the Farukhabad District; Ahichhatra in the Bareilly (Bareli) District was the chief city of northern Panchála.

From Jahnu, the son of Kuru, was descended the Rája Sántanu, who had, by the river goddess Ganga, the great Sántanava. Sántanu in his old age desired a young wife, and Sántanava procured him such a one in Satyávatí, but the girl's parents refused to give their consent, on the ground that Sántanava would succeed to the throne before their daughter's son. On hearing this, Sántanava, to please his father, vowed a life of celibacy, and gave up his right to the throne to the offspring of Satyávatí. Henceforward he went by the name of Bhíshma or "the dreadful," on account of his dreadful vow. Satyávatí bore two sons, Chitrángada and Vichitravírya. The first was killed in conflict with the Gandharvas or inhabitants of the hilly tracts to the north, and the latter married the two daughters of the king of Káshi (Benares). Vichitravírya died without issue, and his mother thereupon applied to his half-brother Bhíshma to raise up sons to continue the line. Bhíshma's vow of celibacy precluded him from undertaking the task. The Rání Dowager² then ordered her son Vyása to take to wife his half brother's widows. The offspring of this marriage was Dhritarashtra, the blind, Pándu the pale, and, by a slave-girl, Vidura.

The three boys were brought up by their uncle Bhíshma, who on their coming of age set aside Dhritarashtra, because he was blind, and Vidura because of his lowly birth, and elevated Pándu to the *ráj* of Bhárata. Amongst the Sátwatas descended from Kroshtu son of Yúdu was a prince named Súra, who gave his daughter Pritha to Bhoja or Kuntí-bhoja, a rája who dwelt on the Vindhya mountains. She married Pándu and bore to him Yudhishtira, Bhíma and Arjuna, who, owing to Pándu, from a curse pronounced on him, being unable to procreate children, were in reality the offspring of the deities Dharma, Váyu (the air), and Indra. Before her marriage with Pándu, Pritha or Kuntí had a son (Karna) by the divine

¹Satya dhriti, a Panchála prince, had a daughter by Urvási, whom he abandoned. She was found by Raja Sántanu, who brought her up and gave her in marriage to Drona; she bore to him Aswatthama.—V. P. IV., 146.

²Satyávatí is said to have borne Vyása or Krishna-dwaipayána, the relator of the Vishnu Purána to Parásara, before her marriage with Sántanu. He also was therefore a half brother of Vichitravírya, and as such was then legally entitled to marry his deceased brother's widows.

Aditya (the sun,) whom she exposed, while still an infant, on the banks of the Jumna. He was found there by Adiratha, the *sitta* or charioteer of king Súra, who brought him up as his own son.¹ Pándu had a second wife named Mádri, who bore him, by the twin sons of Aditya (Násatya and Dasra), the brothers Nákula and Sábadeva. Pándu died soon afterwards, and was succeeded in the *raj* by Dhritaráshtira, who married a daughter of the Rája of Gándhára (Peshawar). She bore him Duryodhana, Duhsásana, and other sons to the number of one hundred, known henceforth as the Kauravas, from their progenitor, Kuru, to distinguish them from the Pándavas, the five sons of Pándu.²

The youths of both families were brought up together in Hastinápura, and were Early life of the Pándavas and Kauravas. instructed in the use of arms by Drona, who had quarrelled with the Panchála Rája Drupada, and taken up his residence with Bhíshma. Drona made one condition with them, that on their acquiring a thorough knowledge of their weapons, his pupils should assist him in fighting against Drupada.³ Yudhishtira became a proficient in the use of the spear; Arjuna was the most famous archer of his time; Bhíma learned the use of the club;⁴ Nákula, the management of horses, and Sábadeva became an expert swordsman. Arjuna and Bhíma were the favourite pupils of Drona, and on this account excited the jealousy of Duryodhana and his brethren the Kauravas. The military school soon became famous, and many sons of Rájas flocked for instruction to Drona, and amongst them the son of the Rája of the Bhíls, whom, as a barbarian, Drona refused to instruct. Nothing daunted, the Bhíl prince set up an image of clay to represent Drona, and learned archery by practising before the image. On seeing this Drona permitted the Bhíl to continue the practice, but bound him by an oath to use the middle finger alone in drawing the string, hence this custom is said to have descended amongst the Bhíls to the present day. Continuous public assaults of arms were held by the pupils of Drona, with whom many strangers⁵ tried their strength.

The Kauravas, according to the compact with Drona, first attempted the reduction of Panchála, but were unsuccessful. The Pándavas however succeeded, and this added to the jealousy with which they were regarded by their cousins. This was further

Feuds arise.

¹ See Wheeler's History, I., 93.

² For a fuller account of the Mahābhārata, see Wheeler's History of India, Vol. I.: London, 1867; and for a translation of the entire poem, see Fauche; Paris, 1863-70.

³ Drona was the son of the preceptor Bharadwaja, and was brought up by his father with Drupada, son of Prishata, the Rája of Panchála. When both grew up, Drupada treated Drona with disrespect and continually taunted him with his inferiority, as a mendicant Brahman, to the position of himself as a Kshatriya Rája. On this account Drona sought revenge.

⁴ Hence the monoliths bearing Asoka's edicts are popularly known as *Bhím Sen ke gadá*, or 'Bhím Sen's club.'

⁵ Karna, the charioteer, first appears in public at one of these assemblies.

heightened by the contest for the post of heir-apparent or Yuvarāja, which was conferred on Yudhishthira by Dhritarashtra. But to such a height did their contentions go, that the Mahārāja recommended the Pándavas to proceed for a time to Váranávata (Allahabad), until matters could be arranged.¹ There Duryodhana caused them to be lodged in a house smeared with lac and other combustible materials, with the intention of burning the Pándavas and their mother Kunti in it.² From this fate they were delivered by digging an underground passage, at the suggestion of Vidura, through which they escaped unnoticed to the great jungle. Here they met with many adventures: Bhíma subdued the Rakshasa Hidimba, whose daughter he married, and the cannibal Asura Váka, who used to devour daily one of the inhabitants of the city of Ekachakra, identified with the modern Ara (Arrah).

On their departure from Ekachakra, the Pándavas heard of the approaching *swayamvara*³ of Draupadi, the beautiful daughter of the Panchála king Drupada. They proceeded to Kámpilya, the residence of the Rāja, and there Draupadi was won by the prowess of Arjuna, who struck the eye of the golden fish through the *chakrá* at the first discharge from his bow. The catalogue of the Rājas attending the assembly is of some interest, as showing the principal kingdoms of those days. From Dwárka came Krishna and Bálaráma; from the north-west the Rāja of Sindhu (Indus), and the sons of the Rāja of Gándhāra (Peshāwar); from the east came Vatsarāja, the Rāja of Kosala (Berar), Járasandha, Rāja of Magadha (Bahar), and the Rāja of Paundra (Bengal proper); from the south came the Rāja of Ohhedí (on the Narbada), the Rāja of Virāta (Matsya),⁴ and the Rāja of Madra (Panjáb). Draupadi married the five brothers, and returning to Hastinápura it was resolved to divide the *rāj*. The Pándavas took the western half known as Khándava-prastha, and founded the city of Indra-prastha on the bank of the Jumna. They then burned the forest and drove out the Nāgas and their Rāja Takshaka from the neighbourhood, and built separate houses for themselves. Draupadi lived in turn with each of the brethren, and it was agreed amongst them that "if a brother entered the house of another brother while Draupadi was dwelling there, he should depart into exile for twelve years." Arjuna broke this rule first, and in consequence set out from Indra-prastha to visit other countries. Amongst the places visited by him are Hardwár on the Ganges, where he had an intrigue with Ulúpi, the daughter of Vāsuki, the Rāja of the Nāgas. He then went to Mahendra or Malabar, where he visited Parasurám,⁵ and next to Manipura

Arjuna's exile.

¹ There is good reason for believing that this episode of the exilo to Váranávata is an interpolation of later times. ² See V. P. IV., 80. ³ The *swayamvara* gave the woman, as the prize of skill and valour, to the most distinguished of the competitors, or allowed her to choose from amongst the suitors for her hand.

⁴ A kingdom to the west of Muttra in Gwalior. ⁵ See Vishnu Purána, IV., 24.

where he married Chitrāngadā, the daughter of the Rāja. We then find him at Dwārka in the Yādava country, where he met Krishna and Bālārāma, and espoused their sister Subhadra, with whom he returned to Indra-prastha.

In the meantime the new settlement prospered so much, that Yudhishtira resolved to celebrate the royal sacrifice¹ (*ra-* Condition of Indra-prastha *jasāya*), intended as an assertion of sovereignty as well as a sacrifice to the gods. Yudhishtira had previously subdued many of the neighbouring Rājas, and it is even said that Bhīma and Arjuna had visited Magadha and slain Jārasandha. To complete the preparations, Yudhishtira sent his four brethren to the four quarters of the earth to collect tribute from all countries for the space of a year. On their return all assembled at a great feast in the council hall, including representatives of the four castes,² when the *argha*³ was presented to Krishna as the most important personage present. In return for this Krishna slew Sisupāla, Rāja of Chhedi, for presuming to interfere with the sacrifice. The success of the inauguration of the new *rāj* induced Duryodhana to plan fresh schemes whereby he might dispossess the Pāndavas. For this purpose he induced his father to invite the Pāndavas to Hastināpur, and there inveigled them into a gambling match with his uncle Sakuni. In the game Yudhishtira lost his kingdom, his brethren, himself, and finally his wife Draupadi. A terrible scene then ensued. Draupadi was insulted by Duryodhana, and at length released by his father, who arranged that there should be another game, at which whoever lost should give up his *rāj* and depart into exile for twelve years in a jungle, and one year in a city in disguise. If discovered during the year they lived in disguise they were again to go through their exile. The Pāndavas again lost the game, and leaving their mother Kuntī under the care of Vidura, set out into exile.

For twelve years they wandered through the forest with Draupadi,⁴ occasionally visiting holy places and living on the game Exile of the Pāndavas. they shot on the way. Arjuna visited the Himālayas,

¹ These sacrifices, as observed by Mr. Wheeler, underwent several modifications. The original type, or the coronation banquet, was subsequently converted into sacrificial sessions of a purely religious character; then came the Buddhists, who substituted flower offerings for animals; and finally the *homa* (clarified butter), and *pāyasa* (rice and milk) came in with the Brahmanical revival in the ninth century. ² "All Brahmans and Kshatriyas, and all the respectable Vaisyas and Sudras."

³ The *argha* is an offering of flowers, milk or honey still made to idols, or a Brahman, or a bridegroom on his wedding day.

⁴ Draupadi bore five sons, one to each of the Pāndavas: the son of Yudhishtira was Prativindhya; of Bhīmasena was Sutasoma; of Arjuna, Srutakīrti; Nākula begot Satānika; and Sāhadeva, Srutakarman. In his notes on the history of Kashmir (As. Res. XV., II.) Prof. Wilson alludes to the traditions which make Kashmir the native seat of the Pāndavas. Besides the history of Kashmir, which positively asserts that 52 kings of the Kaurava family ruled there, Wilford shows, from Hindu authorities, that the city of the Pāndavas was in the valley; and even the Mahābhārata makes "the holy mountain of Himavat" the birthplace of the five sons of Pandu.

where, by propitiating Siva, he became possessed of powerful weapons. Whilst in the jungles the Pándavas heard that the Kauravas had been captured by the Gandharvas of the hills, and returning good for evil rescued them from their enemies. This was not the only adventure that befel them, for the Rája of Sindhu, passing by the hermitage of the Pándavas during their absence, saw Draupadi, and falling in love with her, carried her off, when she was with difficulty rescued by Yudhishtira. For the year of exile in disguise the Pándavas chose the city of Rája Viráta (Matsya), and entered into his service under assumed names. They remained there for the year, and defeated an attack of the Kauravas and the Rája of Trigarta (Hill State of Kotoeh). The Pándavas then disclosed their real origin and made an alliance with the Rája, confirmed by the marriage of his daughter Uttara with Abhimanyu, the son of Arjuna by Subhadra. At a council held immediately after the marriage feast, it was resolved to send an embassy to Hastinápura to demand the restoration of Indra-prastha. Drupada despatched his family priest on behalf of the Pándavas, and Dhritaráshtira and Bhíshma lent a favourable ear to their application; but Karna¹ and Duryodhana were intractable, urging that they had discovered the Pándavas before the expiration of the thirteenth year. Sanjaya, the charioteer of the Mahárája, was, however, despatched to the Pándavas, but the negotiations ended in disappointment, nor did Krishna fare better in his efforts at mediation.

War was resolved on by both sides, forces were collected, and every preparation made. Both Kauravas and Pándavas marched to the plain of Kurakshetra near Pánipat, and there intrenched themselves. Bhíshma was appointed generalissimo of the Kauravas, and Dhrishtadyumna, son of Rája Drupada, filled the same office on the side of the Pándavas. Every precaution was observed. A lake lay between the Pándavas and their enemies, on one side was the Saraswati river, and on the other a deep trench was dug, while sentries were posted, and signs and passwords were appointed by which they might recognize their own people. A challenge² was then sent by Duryodhana to the Pándavas, filled with the most insulting references to the events that had taken place, and this was replied to by Arjuna. The next step was the formation of a code of rules by the commanders of each army for ameliorating the horrors of war, which, however disregarded during the war in individual instances, were generally adhered to.³

¹ Karna owed Arjuna a grudge on account of Draupadi's objecting to his candidature at her *swayamvara* because of his suspicious parentage. ² The herald charged with the message recapitulates all the wrongs the Pándavas had suffered at the hands of their cousins, and dares them to take revenge; in fact the harangue is something of the nature of the speeches Fenimore Cooper puts in the mouths of his American Indian heroes. ³ These 'Geneva' rules deserve reproduction. They are—(1) We agree not to make war by stratagem or treachery. (2) When fighting we will fight to death, but when we leave off we may visit each other, hold conference together, or mess

The battle opened with the usual shouting and clangour of drums and conch shells, and lasted for eighteen days¹. The Pándava commander remained to the last, but on the tenth day the Kauravas lost Bhishma, slain by Arjuna. Bhishma was succeeded by Drona for five days; on his death Karna assumed the command for two days only, when he also was slain. Sálya was the Kaurava commander on the last day. The narrative of the battle during the first ten days is little more than a description of a succession of charges, and the conversations of the principal actors on the day's events. On the twelfth day some curious tactics were displayed. The Kauravas were drawn up as a spider's web and entirely surrounded their enemies until relieved by Abhimanyu, who charged them repeatedly, and while doing so lost his life. The battle was then renewed by torchlight, and on the fourteenth day Drona fell at the hands of Drishtadyumna. The principal events of the two days during which Karna commanded are the fight between Bhima and Duhshásana, when Bhima fulfilled his vow of drinking the blood of Duhshásana, on account of an insult offered by him to Draupadi; and the fight between Arjuna and Karna, in which the latter was slain. Sálya, Rája of Madra, who commanded on the last day, was slain by Yudhishtira, and but three warriors were left to the Kauravas. On seeing this, Duryodhana concealed himself amid the bulrushes in the lake, but was discovered and compelled to fight with Bhima. Both were wounded in the encounter, and the conflict ceased. The Pándavas then proceeded to plunder the camp of the Kauravas, but during their absence Aswatthama, the son of Drona, one of the surviving Kaurava warriors, entered the Pándava camp and slew not only their general Drishtadyumna, but also the five sons of Draupadi. Duryodhana died of his wounds on the field. The next scene represents the reconciliation of the Pándavas with Dhritarashtra, the visit of the wives and families of the deceased warriors to the field of battle, and the cremation ceremonies.

After the funeral ceremonies were completed, Yudhishtira proceeded to Hastinápura, where he was installed as Rája, under Dhritarashtra, and attempted the celebration of the great

together. (3) We will spare all drummers, charioteers, those that run away and those that lay down their arms. (4) Horsemen alone shall fight with horsemen, elephant riders with the same class, footmen with footmen, and those in chariots with warriors in chariots. (5) When warriors are only abusing each other they shall not also use arms. (6) No man shall take up arms against another without giving him warning. (7) When two combatants are engaged together, no third person shall interfere. These unique rules need no comment, and even here the chronicler is forced to say very often "they fought fairly for an hour or two, and then like drunken Asuras, they forgot all the laws of fair fighting, and fell to in great confusion."

¹ Before commencing, Yudhishtira piously asked permission of his preceptors Bhishma and Drona to attack them.

aswamedha or horse-sacrifice.¹ Arjuna led the army which followed the horse with many adventures for one year, and returned successfully to Hastinápura, where the great sacrifice was made with *homa* of curds, milk and clarified butter. For some time after this all lived in peace, until Dhritaráshtra, mindful of the death of his sons at the hands of Bhíma, determined to separate from the Pándavas, and with his family retired to the jungles on the banks of the Ganges, where they all perished in a jungle fire. From Dwárka, too, news came of the death of Krishna and Bálaráma, and the destruction of the city by a cyclone. Oppressed by these disasters, the Pándavas resolved to abandon worldly affairs, and gave the *rāj* of Hastinápura to Parikshit, the son of Abhimanyu by Uttara, and grandson of Arjun, and the *rāj* of Indra-prastha to Yuyutsu, the only surviving son of Dhritaráshtra. Then, assuming the garb of devotees, they passed forth from the city towards the rising sun, and reached the Himálaya mountains, where they died.

The preceding story gives us the history of the fortunes of the first great outpost of the Aryan immigrants after they passed the Saraswati to Brahmarshi-desa, or the land of the *Rishis* or Sages. It also marks the commencement of the Brahmanical period, when the Brahmans first began to assume the exclusive direction of religious ceremonies, and the permanent distinctions of caste began to be established. The Puránas make mention of Brahmans being descended from several of the ancestors of the Pándavas; of others it is said that they were progenitors of

¹ The *aswamedha* seems to have been of a more important character than the *rajasúya*. In the former the mere proposal to sacrifice carries with it the idea of universal sovereignty, while the latter seems to consist for the most part of the mere inauguration ceremonies of a new State. In the *aswamedha*, a horse was taken of a black colour or 'of a pure white colour like the moon, with a yellow tail and a black ear,' and was allowed to run loose wherever he willed for the space of one year. The Rájá and his army followed the horse into every country, and wherever it went the Rájás were obliged either to fight or submit. At the expiration of the year, if always victorious, the Rájá and his army, accompanied by the other Rájás whom he had subdued, returned to his city, where a grand sacrifice was made, at which the horse was killed and eaten by the guests. Before the sacrifice the principal actor and his wife bathed, and then the ground was measured off by the Rájá and ploughed by him, while the Rání sowed a portion of each kind of seed, and the Brahmans and women prayed. The ground was then paved with golden bricks, and eight pillars and a canopy were erected of the same material. Then eight large pits were dug and eight ladles made for the *homa* of curds, milk and clarified butter, in which skins stuffed with every edible vegetable were placed. Water was brought from the Ganges by the principal guests and their wives, on whom the Rájá in return bestowed garlands of jewels, and gave them betel-nut to eat, and at last a fire was lighted in each pit, and the various ingredients for the *homa* were presented to it. The Rájá was then bathed in the Ganges water as well as the horse; the horse was then decapitated and opened for the discovery of omens, after which portions of his flesh were added to the *homa*, and the remainder was distributed among the guests. The assembly closed with the ceremony of bathing the Rájá and his wife with Ganges water by the assembled guests and their wives.

representatives of the four castes. The sage Vyása himself, the compiler of the Vedas and the Mahábhárata, was the reputed father of the Kshatriya Pándavas. All through the Vaidik records the Brahman is held to be inferior to the Kshatriya, and even here we see it in the treatment Drona received at the hands of Drupada. At the same time the gradual reversal of the position of the two classes may be traced, and the gradual submission of brute force to intellect. The legends also show the processes of early colonization. When the settlement at Hastinápura became overpopulated, a colony was formed on the Jumna, whose first care was to burn down the forest and drive out the aboriginal tribes known as Nágas, Daityas, Asuras and Bhíls. The conquerors frequently took to themselves wives from these peoples, or were adopted into their families. The form of government was a patriarchal despotism, the connecting link between the family rule of the Vaidik age and the monarchical institutions of later times. Submission to the head of the family and the procreator was regarded as a sacred duty. Polyandry¹ was practised, as well as the custom still existing among semi-aboriginal tribes such as Jíts, Gújars, Ahírs, Pásís, Chamárs, &c., of marrying the widow of a deceased kinsman. The only instance of *sati*, or the burning of wives with their deceased husbands, is clearly a modern interpolation. Hunting and athletic sports were the principal amusements, while all engaged in agriculture, the chief himself marking its dignity by ploughing the ground with a golden plough at the great sacrifice. Cattle, too, formed a great portion of their wealth, and every third year there was an expedition to the forests to brand all the calves that had been born. The weapons in use were the sling, lasso, spear, club, bow and sword. Horsemanship was considered an accomplishment, and driving the chariot of the Rája was an office of high rank, and only held by a confidential servant. The uprohit and the charioteer frequently appear as the advisers, ministers and ambassadors of the Rája. The women of the family showed themselves in public, and were present at the great feasts, where wine and flesh were freely partaken of. At the *swayamvara*, women were allowed to choose their husbands among the suitors, and even were given away as a prize to the victor in the tournament, had a right to exclude an unwelcome suitor from the trial. They also presided over the distribution of food and all the household arrangements, but even here the mother-in-law was the head of the spindle-side.² The most popular vice of the Kshatriyas was gambling, while the aboriginal tribes seem to have been addicted to drunkenness. Altogether the picture still presented to us is that

¹ At the same time Pándu had two wives and Dhritarashtra had only one. ² Witness the story of the mother of the Rája of Badrayatí, who, when invited to accompany her son to the *aswamedha*, replied "I will never quit this house; for if I stir, all the goods and chattels here will be used up. My maids and servants will be every day plundering milk and grain and butter, so that when I return half my property will be wasted or stolen."

of a family of fair-complexioned immigrants, with their dependants and followers, settling down in a land clothed with forest and inhabited by dark-skinned wandering tribes. Their chief wealth lay in their cattle, but they brought with them also the arts of agriculture. Increasing numbers and a settled life carried with them new wants and modified the form of government. Each colony from the parent stock in course of time assumed independence, and became mindful of its own interests alone. Hence numerous petty states arose, which, in the natural course of events, sought each to aggrandise itself at the expense of the others, until one became paramount; and, whilst permitting a certain amount of independence, assumed a general control. Instead of the great council, where all Brahmans and Kshatriyas and even respectable Vaisyas and Sudras were present and gave their opinions, the power gradually centred in the Rája alone, who was assisted by a minister and a commander of the forces. When the numbers were small, every one who might be called upon to assist in the defence of the State had a voice in its deliberations; with increasing civilisation the privilege became confined to the Brahmans and the Kshatriyas, until the former became supreme as the spiritual counsellors and trusted advisers of the king.¹

The Vishnu Purána continues the history given in the Mahábhárata, and from it we learn that Parikshit had four sons, Janamejaya, Srutasana, Ugrasena and Bhímasena. From Janamejaya came Sátanika, whose son was Aswamedhadatta or 'he who was given by reason of a horse-sacrifice.' To him succeeded Adhisima Krishna, whose son was named Níchakru. In his reign the capital was transferred from Hastinápura to Kansámbi, in consequence of the former city having been swept away by the Ganges.² After him came twenty-one princes, ending with Kshemaka. Giving a reign of 18 years each to these princes, their dynasty would end in the tenth century before Christ.

No traces of the ancient Indraprastha now remain, with, perhaps, the exception of the Nigambodh Ghát immediately outside the northern wall of the city of Sháhjahánabad. This is celebrated as the place where Yudhishtira caused the eight pits to be dug for the reception of the *homa* at his great horse-sacrifice.³ The site of the ancient city is traditionally connected with the space between the *kotila* of Fírúz Shah and the tomb of Humáyun, within which lies the fort of Indarpat or Purána Kila. The old bed of the Jumna, lying one mile to the westward of its present

¹ I can merely give a most meagre outline of the story contained in this wonderful poem, but feel convinced that in the apparently most puerile and absurd of its legends there must be some germ of fact, which a careful study of the poem as a whole, and the different works bearing upon it, would discover, and afford materials for a genuine 'History of India' during the Hindu period.

² Kansámbi has been identified with Kosim on the Jumna, near Allahabad. See the volume relating to the Allahabad Division.

³ Wheeler's History, I, 423.

course, is easily traced beneath the walls of the old fort.¹ The Rájávali and Bhágavata Purána make the Indraprastha line of princes continue in the family of Arjuna. Kshemaka of Hastinápur was deposed by his minister Visarwa, a contemporary of Sisunága of Magadha. Taking the birth of Parikshit in 1430 B.C., and his accession to the throne in 1400 B.C., and giving 18 years each to the reigns of the thirty princes of his line, this would bring the revolution of Visarwa to 860 B.C. Again, adding the reigns of the Nandas (100 years) and those of the Saisunágas (362 years) to the date of the accession of Chandragupta (315 B.C.), we have the date 777 B.C., or a difference of about 89 years, which, in this arbitrary mode of calculating the duration of reigns, is not to be considered conclusive of the existence of any substantial error. Visarwa was succeeded by thirteen other princes of the same family, ending with Madpál, who was slain by his Rajpút minister Maháráj or Mah-
raje, of the Gautam clan.

Mahraje, who is probably the Maháraje of Firishda, was followed by four-
Other dynasties, teen princes of the same family, ending with Antinai, who resigned his kingdom to his minister, the founder of the Mayura dynasty.² The last of these princes, Rájápála, is said to have been attacked and killed by the Rája of Kumaon, called Sákáditya or 'lord of the Sákas.' Colonel Tod states that Rájápála invaded Kumaon and was killed by Sakwanti, who seized on Indraprastha, whence he was expelled by Vikramáditya. Regarding the identity of this Vikramáditya, the authorities are conflicting. "The Hindu accounts of Vikramáditya are not to be found in the regular Pauránik histories, but only in separate legends, such as the Vikrama-charitra and others mentioned by Wilford,³ all teeming with confusion, contradictions and absurdities in an unusual degree. The genealogical tables of the Solar and the Lunar lines contain no such name; neither does it occur⁴ among the few notices of embassies to and from India to Syria and Rome, in the authors of the west." It has even been hinted that the name of Vikramáditya and the Bactrian Greek Eukratides "bear a close resemblance both in sound and in signification; while the epoch and the scene of their martial exploits are nearly identical." Following up this train of reasoning, General Cunningham has identified the Vikramáditya of 57 B.C. with the Hima Kadphises of the coins, an Indo-Scythian prince.

¹ Arch. Rep. I., 136. Dehli is now beyond the limits of these Provinces, and its history can only be very briefly given here, and only so far as it illustrates the local history of the Duáb. Mr. B. glar's survey of the antiquities of Dehli and its environs will be found in Arch. Rep. Vol. IV. ² Colonel Tod's list, Ward's list (I., 24), and General Cunningham's list (J. A. S. Ben. VII.) of this dynasty are given in Prinsep's Essays, II., 239. Tierfenthaler (Bernoulli, I, 152) continues the list through Vikramáditya's descendants, through the Bais Rája Tilokchand and a Bengal dynasty, to the dynasty founded by the lord of Badordes, who was succeeded by the Chauháns. ³ As. Res. IX., 117. ⁴ Prinsep, I., 187; II., 249, 250.

With the advent of the Sákas the name of Dilli first appears, which, according to one tradition, was given to it by a Rája Dilli or Dehli. Dhilu, its founder¹. Firishta adopts this account, and makes Rája Dhilu reign for some time and succumb to the arms of Rája Phor or Porus of Kumaon, who is identified by General Cunningham with the Sákáditya of the Rájávali. The overthrow of the Sákas is commonly attributed to the Vikramáditya, who assumed the title of Sákári, and established the era dating from 57 B.C., which is still in common use throughout Northern Hindustan. It is, however, more probable that the defeat of the Saka conqueror of Dilli should be placed in 78 A.D., the initial date of the Saka-era of Śālivāhana, and the foundation by Rája Dhilu in 57 B.C., who was displaced immediately after by an Indo-Seythian prince. Tradition declares that Dehli was deserted from the time of its conquest by Vikramáditya to its being rebuilt by Anang Pál, the first Tomar prince. The existence of the iron pillar set up by a Rája Dhava during the fourth century, and, if correct, the identification of the Daidala and Indabara of Ptolemy with Dehli and Indarpat, would, however, at least show that it was inhabited during this period.²

Some slight light is thrown on the early history of the Upper Duáb from the chronicles of the Buddhist rulers and travellers. Amongst the ancient remains still existing at Dehli are two stone pillars, bearing the edicts of the great king Asoka. One of these was brought³ by Fírúz Shah Taghlak from a place called Topur, Tobra, Tamera or Nahera, on the banks of the Jumna, in the district of Sálaura, not far from Khizrabad, "which is at the foot of the mountains, ninety kos from Dehli" in the Salárunpur District. The second pillar, recently restored and standing near Hindu Rao's house, was brought by the same ruler from Meerut. Both of them contain inscriptions in the Páli language, written by order of Asoka or Priyadarsin, who reigned in Magadha or Behar from 263 B.C. to 223 B.C. Similar inscriptions are found on the Allahabad stone pillar (*lút*), and on the rocks at Girnar in Káthiwar; at Kapurdigiri near Pesháwar; at Dhauli in Orissa, and at Kálsi on the Jumna, in the Dehra Dún, a short distance north of Khizrabad. These are

¹ See on this point Arch. Rep. I., 140. Tieffenthaler (Bernoulli, I., 125) has the same story, but gives the name Ráseu. ² Prinsep has translated this inscription (Ess. I., 320). It

records the erection of the pillar in commemoration of the victorious prowess of Dhava, who seems to have deceased prior to its completion. Dhava's forces subdued the Vahlíkas on the Sindhu, so that even at the time of the inscription, his army "and defence on the south of the river are sacredly respected by them." Though it is not necessary that Dehli must have been either the original site of the pillar, or, if it were erected there, that Dhava had his residence in Dehli, yet its presence shows that there must have been a settlement in the place. Mr. Prinsep connects the Vahlíkas here mentioned with the Vahlíks of Balkh, who receded before the Seythians to the south of the Paropamisar range. ³ In A. II., 752 to 790; Prinsep, Ess. I., 324; A. II., 757, or A. D. 1356; Cunningham, Arch. Rep. I., 161.

undoubtedly authentic records showing the supremacy of the Buddhist sovereign of Magadha all over Hindustan, from Orissa to Pesháwar. Local tradition makes the Kálsi stone the boundary between the Húnas on the north and the Emperors of Hindustan on the south. The subject of the extent and character of Asoka's rule will be more fully considered under the notice of Allahabad.

Fa Hian, the Chinese Buddhist traveller¹ who visited India from 399 to

413 A.D., does not mention any place between Muttra
The Chinese pilgrims. and Taxila. Hwen Thsang, however, in 634 A.D.,

passed through Stháneswara (Thanesar) on his way from Muttra to Srughna, and may have passed close to Dehli if proceeding by the direct road along the Jumna or by Meerut, which, owing to its being a station of one of Asoka's pillars, must have been of some interest to a Buddhist. Neither of these places are noticed by him, a fact which would, at all events, show their small importance in the middle of the seventh century. At the time of his visit to Thanesar, that city was the capital of a kingdom tributary to Harsha Vardhana of Kanauj, bounded on the north by the principality of Srughna; on the east by the Ganges, which separated it from Mandáwar in the Bijnor District; on the west by the Satlaj river; and on the south by an irregular line drawn from near Pákpattan on the Satlaj, by Bhatner and Nárnol to Anúpsahar on the Ganges.² It therefore included the southern portion of the Muzaffarnagar District, the entire district of Meerut, and the northern half of Bulandshahr. At the time of his visit, Hwen Thsang found only three Buddhist monasteries in Thanesar, while the Brahmanical temples numbered one hundred.

Hwen Thsang proceeded from Thanesar by the Gokantha monastery to

Srughna,³ the capital of the kingdom of the same name,
Srughna. which was bounded on the north by the mountains;

on the east by the Ganges; on the south by an irregular line passing through Muzaffarnagar; while the Jumna flowed through the middle of it. The capital has been identified by General Cunningham with the village of Sugh, situated in a bend of the old bed of the Jumna, which surrounds it on three sides, on the old road from Jagádri to Saháranpur, close to a bungalow belonging to the Western Jumna Canal. This agrees with the pilgrim's account, who places it on the west bank of the Jumna. The greater part was then in ruins, but the foundations still remained, and showed the circumference of the city to have been something more than three miles. It possessed fine monasteries, containing one thousand monks, and one hundred Brahmanical temples, besides numerous stupas or topes containing relics of Buddha and other holy men. The site would appear to have been known as Mandal, from the adjoining village of Mandalpur, as early as the reign of Firúz Tughlak.

¹ Translated by the Rev. S. Beal: Lond., 1869.
Arch. Rep. II., 221.

³ Arch. Rep. II., 226.

² See Cunningham's *Anc. Geogh.*, 329;

In 1834, Captain Cautley communicated¹ the discovery of an old town while clearing out the canal bed south of the Belka falls, near Bahat or Behat, in the Saháranpur District. The site was found to be seventeen feet below the general surface of the country, and twenty-five feet below that of the modern town near it. Coins and other remains were discovered in the shingle laid bare by the action of the canal water. The coins were numerous, and some of them were of Indo-Scythic origin, containing inscriptions in Arian or Bactro-Páli, of Semitic origin, also transliterated into Indian Páli of a type little subsequent to the characters on Asoka's pillars. The remains, on the whole, stamp the place as decidedly Buddhist, but "it would be hazardous to attribute to them any greater antiquity than the early part of the Christian era." The discovery is further useful in showing the existence of towns boasting a considerable degree of civilization at this early period, in what may be called the wilder parts of the Upper Duáb. The soil on the site contained numerous specimens of pottery; bricks of a large size and an unusual shape appearing as if they had been made to suit the circular form of wells; pieces of the slag of iron, smelting furnaces, arrow-heads, ornaments and beads. The extent of the deposit, too, would seem to denote a town of considerable extent; and without accepting Bahat either as the centre or positive capital of the kingdom² for whose currency the coins discovered there "were designed to provide, its boundaries might be conjectured as extending down the Duáb below Hastinápur, and westward beyond the latter river to some distance along the foot of the Himálayas into the Panjáb."

Returning to the chronicles of Dehli, we find it universally acknowledged by all authorities that Dehli owes its re-existence as a capital city to Anang Pál, the first prince of the Tomar dynasty.³ This event took place, according to tradition, in 736 A.D., and, on independent evidence, General Cunningham considers this date "as

¹ J. A. S., Ben., (Jan. 1834); Prinsep's Ess. Vol. I., 73, 76, 112, 200. ² Mr. Thomas, Prinsep's Ess. I., 204. ³ Chand Bardai, the celebrated bard, recounts the founding of Dehli by Anang Pál, who, guided by a happy omen, struck an iron column so deeply into the ground that its point entered the head of Seshnág, the king of the Nágas or Indo-Scythians. Upon the stability of this pillar was to rest the fortunes of the Tomar dynasty; yet, deceived by Takshak, the brother of Seshnág, Anang Pál was weak enough to allow it to be moved. Anang Pál then sought counsel of the sage Vyása, who related to him the fortunes of his house. (J. A. S., Ben., XXXVII, 119; XXXVIII, 1, 145, 161).

May not this legend have a foundation in fact, that the Indo-Scythian rulers of the north had still considerable influence so far south as Dehli, and were able to impede the colonizing projects of the Tomar prince. Kumaon traditions place the Katyúras about this period, whose connection with the Kators of Chitrál and the Indo-Scythian princes of Kábul will be noticed in the volume devoted to the Hill Districts. I will only remark here that it is a curious coincidence that Vyádeva, the successor of Kanishka and Huvishka, the Indo-Scythian rulers of Káshmir, bears the same name as the eponymous founder of the Katyúra line in Kumaon, known there as Báśdeo.

being established on grounds that are more than usually firm for early Indian history." It is probable also that shortly afterwards the Tomars transferred their capital to Kanauj, which, owing to the pressure of the Musalmáns, they abandoned for Bári in Oudh (1021 to 1051 A. D.); and subsequently, under Anang Pál the Second, returned to Dehli in 1052 A. D., where he built Lálkot or the red fort near the Kutb Minár. Tradition ascribes the building of Táragarh near Ajmer, Indragarh, Tejora between Gúrgaon and Alwar, Achlunera between Bharatpur (Bharrtppoor) and Agra, and Sirsa, to the sons of Anang Pál, which would show that his dominions extended from Hánsi on the north to Agra on the south, and from Ajmer on the west to the Ganges on the east,—the entire tract beyond the Ganges being at this time held by the Katehriya Rajpúts. Anang Pál II. was succeeded by three other princes of the same family, the last of whom, Anang Pál III., was conquered by the Chauháns Prince, Bisal De or Vísala Deva.

The conquest of Dehli by the Chauháns under Vísala Deva took place about 1151 A.D. The Firúz Shah pillar, or golden *lút*,
 Chauháns, already mentioned as containing the edicts of Asoka, has an inscription of this prince, which has been translated by Mr. Colebrooke.¹ This was written in 1164 A.D., to commemorate the fortunate Vísala Deva, the son of Vella Deva, Rája of Sákambhari, who had reduced under his sway the entire country from the Vindhya to the Himádrí. In this inscription he urges on his descendants not to permit their "minds to be void of exertion to subdue the remainder." The conqueror appears, however, to have left Anang Pál in possession of a portion of the Dehli territory. Someswara, son of Vísala, received in marriage the daughter of Anang Pál. The issue of this union was the famous Prithivi of Prithiráj, also known as Rai Pithaura.

Prithiráj was adopted by Anang Pál in 1169 A.D., and succeeded him in the following year as king of Dehli, where he reigned for 22 years. For his history we have fortunately the voluminous poem by Chand, known as the Prithivi Ráj Ráosa already alluded to. It is divided into several books. Mr. Beames has translated a portion relating to the seizure of Padmávati in the fort of Samud Sikhar by Prithiráj, and the fight between him and Shiháb-ud-dín, and the entire work is now being printed. The Chandel-Chauhán war has been mentioned under the notice of Mahoba,² and the chapter on Kanauj will be found under Kanauj. Dehli was captured by the Musalmáns in 1193 A.D., and with this date commences the Musalmán occupation of Eastern India; and as it is not my purpose to trespass upon the work so well done by Elphinstone and others, this sketch of the early history of the districts of the Upper Duáb will close here where the Musalmán historian Firishta and his editors commence their histories. I will merely add

¹ Prinsep's Essays by Thomas I., 325; As. Res., VIII., 130. ² Gazetteer, I., 526.

what I have been able to glean from local traditions, and leave the general history up to the eighteenth century to be gathered from the pages of Elphinstone and Elliot.

Connected with the Muhammadan invasion of India, there is no one of whom more wild legends are recorded than Sipáh Sálár Sálár Masaúd.

Masaúd, the prince of martyrs. He is the popular hero of the Musalmán romances, occupying in them the position of the Pándava Arjuna in the Hindu poems. Sálár Masaúd was the son of Sálár Súhu,¹ brother of Mahmúd, and was born in Ajmer² in 1014 A.D., while his father was living there. When he was only twelve years of age he led an expedition against Rawál, in which he was successful. Throughout his life he acted on the principle that "no faith should be kept with unbelievers." When Mahmúd permitted the ransom of the idol of Somnáth, though the money was paid by the Hindús, the youthful fanatic persuaded Mahmúd to break his word, and broke the idol into pieces. To such a degree was his influence felt, that several of the old servants of Mahmúd retired from the court in disgust, so that Mahmúd was reluctantly obliged to exile his favourite by sending him on an expedition to Hindustan. Masaúd's force captured Multán, where he remained during the rains, and then advanced to Ajudhiya. Delighted with the climate and the sport, he remained there until the end of the following rains, and then proceeded to Dehli. Here he was reduced to great straits in his contest with Rája Mahípál, but was relieved by the unexpected arrival of reinforcements from Ghazni, by whose aid he entirely defeated the Hindús. Leaving a garrison in Dehli, Sálár Masaúd proceeded to Meerut, where the princes of that place acknowledged his supremacy, and received again their possessions as tributaries of the Musalmáns. Rai Ajípál³ of Kanauj in the same manner is said to have done homage to the Musalmán leader. From Kanauj he made a ten days' march to Satrakh,³ which is described as lying in the centre of India; "it had, moreover, good hunting grounds, and was a sacred shrine of the Hindús." Hence he made expeditions to Benares, Muttra and Gopamau, and eventually 'suffered martyrdom' at the hands of the Hindús at Bahráich in 1033 A.D. Within the next three centuries the tomb of this warrior had become a place of pilgrimage, as we read of Saltán Muhammad-bin-Tughlik proceeding to Bahráich to make offerings at the shrine in 1343 A.D., so that there may be some foundation in fact for the popular legends regarding this pioneer of Muhammadan conquest in Eastern India.

¹ It may well be doubted whether he ever existed, or, if so much must be conceded, whether his exploits are founded on historical facts. In the *Mir-at-t-Mir*, which gives an account of his life, facts and fiction are strangely combined, and the great hero of the tale is completely appropriated to the hero of the tale (Dowson's Elliott, II. 311).
A.H. ² Identified by General Cunningham with Beahm.

Some further information regarding the distribution of power amongst the Hindu inhabitants of the Upper Duáb during the Muslim occupation may be gathered from local traditions.

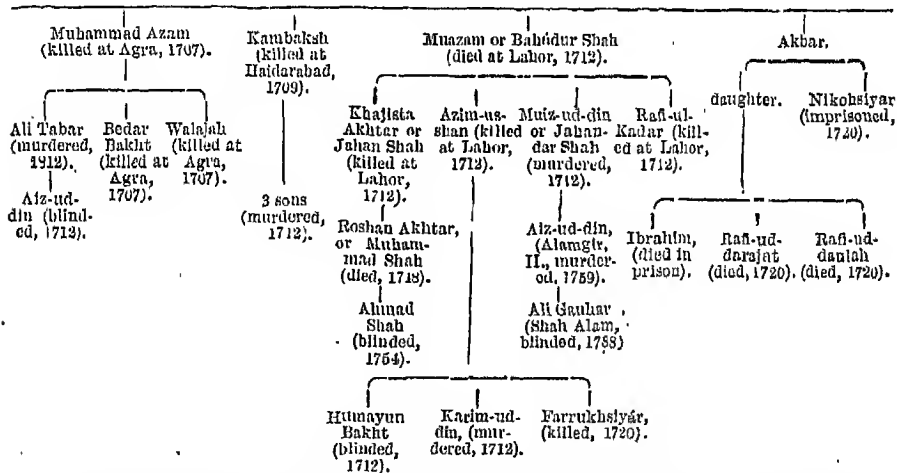
Local tradition.

In the three upper districts of the Duáb, Pundirs, Gantams, Gaurs, Gahlots and Tagas were amongst the earliest inhabitants; subsequently, large immigrations of Játs and Gújars took place from the west. The Tagas received their lands for the aid rendered by them to Rája Janamejaya in his great snake sacrifice. Here again we have local confirmation of the contests between the Aryan colonists and the Indo-Seythie tribes. Rája Ahibaran (the snake coloured) founded Baran in the Bulandshahr District. His dynasty was succeeded by that of the Dors, who, under their leader Hardatta, occupied the Duáb from Kol to Meerut, where he constructed forts to guard the boundaries of his territory. The Dors were followed by the Mewatis, and they again by the Bargijars in the southern districts, and these latter now form the characteristic element amongst the Rajpút population of Bulandshahr. The Dors fell with the advent of the Musalmáns and the pressure of immigrant races from the west. In the Aligarh District they have been replaced by Chauháns, Pundirs, Jádons and Porachs. It would be useless repetition to give any further details here, as they belong properly to the local history of each district.

From the Jesuit traveller Tieffenthaler we learn that in the middle of the last century the Síbah of Dehli contained the Sirkárs of Dehli, Budaon, Sambhal, Kumaon, Saháranpur, Rewari, Sarhind and Hissar Fíroza. In the Sirkár of Dehli were Baran with a brick fortress, Bhagpath (Bágpát) situated between two rivers, Barnawa (Barnáwa), Pouth (Púth), Dancor (Dankaur); Sehacarpour (Shikárpur), Tánda Bhághban (Tánda), Tilbegampour (Tilbegampur), Zaharsa (Jhárelia) with a brick fort, Djevar (Jewar), Zazhana (Jhanjhána), Djelalabad (Jalálabad) lying between two rivers, Djelalpour Serot (Jalálpur Sarwat) between two rivers, Dassna (Dásna), Dadarítaha (Dádri), Sikandarabad, Saráwa (Saráwa) with a brick fort, Gharmuctessor (Garhmuktesar) with a fort built of bricks, Cotána (Kutána), Cándela (Kándhla), Cassna (Kásna), Karkhád (Karkhoda), Kikar Khera (Kankar khora), Louni (Loni) with a brick fort, Meerut (Meerut) with a fort constructed of the same material, Haschnapour (Hashtinápur), and Hapour (Hápur). In the list under Sirkár Saháranpur, the names of the parganahs are alone given, and these are identified in the district notice. Passing from the country to the people, I shall now give a sketch of the history of the Upper Duáb during the decline and fall of the Mughal Empire, and will thus show the predisposing influences which led to the intrusion of a foreign power into the heart of India, as well as give the general history necessary to understand the local annals of each district.

The decline of the Mughal Empire may be said to commence from the death of Aurangzeb, for, though the seeds of dissolution were sown during his reign, the plants had not yet appeared, and the fruit was not gathered for some half a century afterwards.¹ It was during this period that the British merchants commenced the formation of their settlements in Bengal; the Persian trader, Saadat Khan, founded the hereditary vazirship of Oudh; the Sayyids of Bárha in the Muzaffarnagar District came into prominent notice; the Bangash family obtained possession of Farukhabad; the Marhattas of the Dakhin began to interfere in the affairs of Hindustan; and the Rohillas and other adventurers flourished and fell. Aurangzeb died at Ahmadnagar in February, 1707, without making any provision for a successor; and, perhaps animated by his example, his sons at once commenced to fight amongst themselves for the possession of the throne. Their names and those of their descendants are given below:—

AURANGZEB (died 1707).



This catalogue of the descendants of Aurangzeb and the fates that befel them is in itself a sufficient commentary on the disorder and anarchy of these troubled times.

¹ As it is impossible, in a work like the present, to do more than give an outline of the principal events of local importance, the reader is referred to the following works for further information on the general history of these Provinces during the eighteenth century:—*Siyar-ul-Mutakherin*, of which one volume was translated by Colonel J. Briggs: London, O. T. F. 1832; and two volumes by a French renegade named Mustafa; *Tarikh-i-Muzafari*; *Aamad-us-Saadat*; *Shah Alamnamah*, a work by S. Raza Khan and Muhammad Hashim, known as Kháf Khan, all as yet in manuscript; Franklin's *Shah Aulum*: London, 1798; Grant Duff's *Mahrattas*, 3 vols.: London, 1824; Jonathan Scott's *Hindustan*; Fraser's *Life of Skinner*; Franklin's *Life of George Thomas*: London, 1805; Hamilton's *Rohillas*: London, 1787; Keene's *Mogul Empire*: London, 1866; Prinsep's *Ameer Khan*: Calcutta, 1832; Sleeman's *Rambles and Recollections of an Indian Official*: London, 1837; L. F. Smith's *Sketch of the Rise of the Regular Corps, commanded by European Officers, in the service of Native Princes*: Calcutta, circa 1801.

Muhammad Azam, who was nearest to the Emperor's camp, took possession of the treasure and marched upon Agra. He was, however, anticipated by Azim-us-shan, the son of Prince Muazam, who invested the city on his father's behalf during the absence of the latter in Kábul. Muazam by forced marches joined his son, and the rival armies met on the plain of Ajaju close to Agra, where a desperate battle was fought on the last day of May, 1707, in which Prince Azam and his sons Bedar Bakht and Walajah, were slain, and Muazam assumed the imperial power with the title of Bahádur Shah. Kámbaksh, who set up for himself in the Dakhin, fell in the battle of Haidarabad in 1709, and with him ended all opposition to the new Emperor. Bahádur Shah was not slow to reward those who had exerted themselves in his cause. The battle of Agra was won, in a great measure, by the energy displayed by a contingent of Bárha Sayyids from the Muzaffarnagar District, who had taken service with Azim-us-shan in Bengal; and when the latter was confirmed in his government, he made S. Abdullah Khan, one of the principal Sayyid leaders, his deputy at Allahabad, while S. Husain Ali, a younger brother, was made vice-governor of Patna. These men were sons of S. Abdullah Khan, so much renowned in Ajmer under the name of Miyán Khan.

Bahádur Shah died at Lahor in 1712 A.D. For a few days Azim-us-shan attempted to retain in his own hand the considerable power he exercised during his father's life-time, but perished in the attempt. Again, Khajista Akhtar, with the title of Jahán Shah, reigned for a few days, but both he and his brother, Rafi-ul-Kadr, were slain by the adherents of their brother Muiz-ul-din, who eventually succeeded to the throne with the title of Jahándár Shah. His first care was to remove all possible competitors for the throne out of his way, and for this purpose he put to death the children of Prince Azam and Prince Kámbaksh, and demanded the person of Farrukhsiyár, the youngest son of Azim-us-shan, from S. Husain Ali, then at Patna. The Sayyid, who owed so much to the father, was reluctant to obey the order; and learning the state of affairs at court, where Jahándár Shah was alienating all his supporters by the cruelty of his acts and the devotion that he showed to his Hindu mistress Lál Kuar, Husain Ali resolved to make one bold attempt at power for himself and the family of his former benefactor. He levied a large force in Bengal and communicated his designs to his brother at Allahabad. The latter at first attempted to dissuade his brother from such a rash undertaking, but seeing that Husain Ali was resolved to persevere, at length threw his whole energy into the conspiracy. S. Abdullah intercepted the revenues of Bengal as they passed through Allahabad to Delhi, and thus supplied with the sinews of war, equipped a considerable force, and converted the artillery of the fort into a powerful field battery.

Jahándár Shah 1712-13
A.D.

In the meantime, Jahándár Shah despatched an army of twelve thousand cavalry, with a complement of artillery, to attack the Sayyid forces at Allahabad before they could be joined by the Bengal rebels. Abdullah knowing his own weakness shut himself up in the fort of Allahabad with one half of his force, whilst he sent the remainder under his younger brothers to harass and distress the enemy, and thus give time for the arrival of reinforcements. The imperial army contrived to elude their opponents, and invested the fort, but had hardly begun their preparations for the assault when they were attacked in the rear by the Duáb flying columns, whilst a sally was made from the fort, which ended in their total rout. Alarmed at this victory, Jahándár Shah tried to detach Abdullah from the service of Farrukhsiyár; but, unfortunately for the success of this movement, the young prince had already arrived at Allahabad with S. Husain Ali and a numerous following, including some of the most distinguished generals of his father. Jahándár Shah then despatched his son, Aiz-ud-dín, with another army, to oppose the progress of the Sayyids. Aiz-ud-dín advanced as far as Kadjuwa on the Ganges; but although he possessed a vastly superior force, he did not consider himself a match for the enemy, and on their first attack, abandoned his camp and baggage into their hands. Early in November the Emperor advanced in person towards Agra, and met the Sayyid forces close to the city, where he was totally defeated, and fled to Dehli. On the accession of Farrukhsiyár to the throne, S. Abdullah was honoured with the title of Kutb-ul-Mulk, and received the command of 7,000 horse, with the office of Vazir, whilst his brother, S. Husain Ali, was named Ihtimam-ul-Mulk, and was given a similar command, with the offices of Amír-ul-Umara and Commander-in-Chief. S. Husain Ali, after some successes in Udepur, received the vicereignty of the Dakhin, whilst his brother remained at Dehli to watch over their mutual interests.

The Sayyids, anxious to strengthen their faction, obtained for their master the hand of a Hindu princess, and it was for his services in enabling Farrukhsiyár to consummate this marriage that Gabriel Hamilton, a physician in the employ of the English settlement on the Hugli, procured a grant of the 24-parganahs for his employers. The Sayyids became all powerful, but quarrels soon arose at court, and a coalition was formed against them, in which the Emperor joined, forgetful of their services and jealous of their power. When this became known, the younger brother came from the Dakhin; and, uniting their forces, the Sayyids deposed Jahándár Shah (1720 A. D.) and raised Rafi-ud-darajat, the son of Rafi-ul-Kadr, to the throne. Rafi-ud-darajat died after a short reign of three months, and was succeeded by his brother Rafi-ud-daulah, who also died within the year. The Sayyids then raised to the throne Prince Roshan Akhtar, with the

title of Muhammad Shah. He soon gave signs of a vigour which, had it been foreseen, would assuredly have consigned him for ever to the obscurity from which he had been raised.

Muhammad Shah.

Intriguing with Nizám-ul-mulk, Muhammad Amír Khan and others, he tacitly approved of the removal of the Sayyids. Husain Ali Khan was assassinated in the Emperor's camp in the year 1720 A.D., while his personal troops were defeated and scattered. On hearing of these events, Abdullah raised a brother of Rafi-ul-daulah to the throne, under the title of Sultán Ibrahim, and exerted his utmost vigour to collect an army and supplies from all quarters. In the meantime the old landholders of the Upper Duáb, whose villages he had seized, rose on all sides and expelled his agents; and finding there was no one to oppose them or restore order, the Gújars and Játs fought amongst themselves and plundered their neighbours. By the lavish expenditure of money, Abdullah was able in a fortnight to march against Muhammad Shah, and being joined on his way by Churáman, the leader of the Ját colony who settled in the Agra súbah in the reign of Aurangzeb, he gave battle to the imperial forces near Hasanpur, between Agra and Delhi, on the 20th October, 1721. The Sayyid forces were here completely routed. Abdullah was taken prisoner, and died by poison three years afterwards, and with him ended the power of this remarkable family.

1721 A. D.

Beyond the rise of the Játs, who murdered the Deputy-Governor of Agra, and the intrigues of the now independent Viceroy of the Dakhin with the Marhattas, there are few events of local importance to detain us during the remainder of Muhammad Shah's reign. The Mar-

1722—1736 A. D.

hattas took part as mercenaries in the wars between the more powerful nobles, and acquired such influence, that Nizám-ul-mulk conceived it to be of advantage to him to employ them against the provinces that remained faithful to the Emperor. They invaded Málwa and expelled the imperial governor; and advancing thence by Bundelkhand (see BUNDELKHAND, Gazetteer, Volume I.), they threatened Allahabad, and routed the governor, Muhammad Khan Bangash, in several encounters. Emboldened by their successes, and finding the plan hitherto pursued by their enemies, of purchasing their forbearance, attended with little danger and much profit, the Marhattas in 1732 extended their ravages as far as Agra; and in the two following years so harassed the Duáb, that the Emperor bribed them with the gift of Málwa and Gujarát, territories they had conquered with the sword and still held in

1736 A. D.

their grasp. Saádat Khan's slight success near Sada-bad, in the Muttra District, served for a time to stem the tide of Marhatta invasion; but not until the Marhattas had an opportunity of sacking the environs of the capital itself. Notwithstanding the necessity that existed for union, the councils of the Emperor were distracted by the private

quarrels of his nobles, and, in consequence, Kumr-ud-dín Khan, the Vazír, was permitted to wreak his long-cherished vengeance on the Sayyids of Bárha by sacking Jánsath in 1737, with the aid of the Rohillas.

The next important event is the sack of Dehli and the surrounding villages by Nádír Shah in 1738, and the general massacre and plunder of the inhabitants. On the departure of the Persians, the state of

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society in the Upper Duáb was merely a reflection of the anarchy and confusion existing at Dehli. The army was disorganised, the treasury was empty, and the only districts spared by the Marhattas were now visited with fire and sword by the Persians. The Marhattas on the south, the Játs, Sikhs, and wandering Afghán bands on the west, and the Rohillas on the east, all agreed in considering the Duáb an enemy's country,—a fit object for spoliation. The death of the Marhatta leader, Báji Rao, in 1740, promised for a time to relieve the empire from those troublesome invaders, but Báláji Rao had scarcely secured his position as Báji Rao's successor than he applied himself to the affairs of Hindustán. He began at once to organise an expedition against the Duáb, from which he was only prevented by an insurrection in his rear. Málwa was again granted as a sop to the Marhattas, whilst Nizám-ul-mulk became absolutely independent in the Dakhín, with his son, Gházi-ud-dín, now son-in-law of the Vazír, holding the chief power at Dehli. The Rohillas, too, under Ali Muhammad threw off all pretence of allegiance; and, to crown all, Dehli was again attacked from the north by Ahmad, the leader of the Abdáli or Duráni tribe of Afgháns, who was, however, obliged to retire. Muhammad Shah died in 1748, and was succeeded by his son, Ahmad Shah.

Ahmad Shah made Gházi-ud-dín Khan Commander-in-Chief, and Abul Mansúr Saifdar Jang, the Governor of Oudh, his Vazír, and calling in the Játs and Marhattas, and a large contingent under Káyam Khan Bangash of Farukhabad, repelled an invasion of the Rohillas. Gházi-ud-dín retired to the Dakhín, and died at Aurangabad.

He was succeeded in his high office by his nephew, Shaháb-ud-dín, son of Firoz Jang, the fourth son of the Nizám. Shaháb-ud-dín, on his uncle's death, assumed the name of Gházi-ud-dín and the title Aamad-ul-mulk, and commenced the quarrel with Saifdar Jang which ended in the latter being deprived of the office of Vazír, which was conferred upon Azíz-ud-dín, son of the late Kumr-ud-dín, and uncle by the mother's side of Gházi-ud-dín. He is, however, better known by the name Intizám-ud-dawlah Khan Khánán. Gházi-ud-dín shortly afterwards proceeded by Agra and Muttra, and attacked the Játs of Bhartpur who had befriended Saifdar Jang in his distress. The Emperor and his Vazír conceiving this to be a good opportunity for ridding themselves of their over-active and overbearing Commander-in-Chief, intrigued with the Játs; but their treachery being discovered, Gházi-ud-dín marched upon Dehli, seized and blinded

the Emperor, and raised Prince Azíz-ud-dín, son of Muiz-ud-dín and grandson of Bahádur Shah, to the throne, under the title of Alamgír II. This happened in the month of July, 1754.

Safdar Jang died soon afterwards, and was succeeded by his son, Shújah-ud-daulah. In 1756, Ahmad Shah Abdáli again invaded Hindustán and sacked
 Alamgír, II. 1754-59 Dehli. He removed Gházi-nd-dín from the vizárat, and
 A.D. appointed the young prince, Ali Gauhar, to succeed him.

At the same time he marched against the Játs; where Gházi-nd-dín so distinguished himself that the Abdáli restored him to the vizárat before his departure. The sack of Muttra and the plunder of Agra are the two most noteworthy events connected with this year's history of these provinces. Gházi-ud-dín, on the departure of the Afgháns, became once more supreme at Dehli, and Najib Khan was ousted from his appointment of Commander-in-Chief, which was conferred upon Ahmad Khan Bangash of Farukhabad. Several attempts were now made to unite the Rohillas, the Oudh chief, and the Játs in a league against the Vazír, for the purpose of redressing the cause of Ali Gauhar and freeing the Emperor from the tyranny of Gházi-ud-dín; but the dread of the Marhatta allies of the Vazír obliged them to decline engaging in such a dangerous enterprise. Ali Gauhar fled to Lucknow, and the Marhattas invaded the Duáb, driving Najib Khán to take refuge in his fort at Shukartár, near the confluence of the Soláni and the Ganges, and eventually overran the whole of Rohilkhand. Alarmed at these successes, Shujah-ud-daulah joined with the Rohillas in repelling the Marhattas, and defeated them at the fords of the Ganges. During this time Ali Gauhar had proceeded to

Ali Gauhar in Bengal. Bengal, with the intention of driving out Jafar Ali Khan, who had been raised to power by the British, and establishing himself there. He crossed the Karmnása in 1759 A.D., but, repulsed in his attacks upon Patna, retired to Allahabad, where he remained until intelligence of his father's death reached him. Gházi-ud-dín, on hearing of the repulse of his Marhatta allies and the approach of the Afgháns, had caused the Emperor to be assassinated. The Abdális in the mean time surprised and cut to pieces one half the Marhatta army under Dátáji, and utterly dispersed the remainder under Malhar Rao Holkár, after which they retired to Anúpsahr, where they encamped for the remainder of the year. Both sides now prepared to contest the sovereignty of Hindustán. Ali Gauhar was written to and installed as Emperor, under the title of Shah Alam. The vizárat was conferred upon Shújah-ud-daulah, and the Rohillas and Najib Khan were urged to assist the great Musalmán confederacy. On the other hand, the Hindús and their allies were not idle: Gházi-ud-dín roused the Játs of Bhartpur, and the entire resources of the Marhatta nation were placed at the disposal of Sadásheo Bhau as Commander-in-Chief. Before the close of the rains the

Marhattas had not only occupied Dehli, but had driven in the Afghán outposts along the Jumna, and between it and the hills, destroying the entire garrison of Kúnjpura and other fortified towns. This success was shortlived, for when the rains ceased, Ahmad Shah crossed the Jumna, and, on the 6th January, 1761, completely routed the Marhattas at Pánipat, where two hundred thousand of the enemy are said to have perished. The Marhattas retired from Hindustán, Najib Khan was made Amír-ul-Umara, Shújah-ud-daulah continued as Vazir, and Prince Mirza Jawán Bakht represented his father at Dehli.

We left Shah Alam at Allahabad in 1759, where he had retired after his first unsuccessful attempt upon Bengal. Collecting another army in the following year, he again invaded Bengal, and though worsted in two engagements, laid siege to Patna. In this attack he was assisted by a party of French under the Chevalier Law. The siege was raised by the efforts of Captain Knox, and all subsequent attempts were repulsed. Shah Alam again took the field in 1761, but met with no better success, and at length agreed to a compromise by which he received the province of Allahabad and Korah, and an annual subsidy of £260,000 a year from the revenues of Bengal. In return for this the Diwáni of Bengal, Behar and Orissa was conferred on the English. Shah Alam fixed his residence at Allahabad, but here fell into the hands of Shujah-ud-daulah, Nawwáb of Oudh, who kept him for two years in a sort of honourable confinement, sometimes at Lucknow, sometimes at Allahabad, and sometimes at Benares. The Nawwáb, under the name of the Emperor, again attacked the British in 1765 at the Karmnása, where he was utterly routed, and further negotiations were entered into, which can be more correctly detailed with the history of the Benares Province.

Enough has been said by way of introduction to connect the general history of the Upper Duáb in the first half of the last century with the local history of the latter half, which alone is the object of the remainder of this notice. The portions of the Upper Duáb comprising the present districts of Saháranpur, Muzaffarnagur, Meerut and the northern parganahs of Bulandshahr, were known as the Báwani or Baoni Mahál, from its containing 52 (*báwan*) parganahs or fiscal sub-divisions. This tract, in the middle of the last century, formed the jágir of Intizám-ud-daula Khan Khánán, the minister of Ahmad Shah. When Gházi-ud-dín resolved to depose Ahmad Shah, he despatched Najib Khán, who had already distinguished himself as a partisan leader in Rohilkhand, with a body of Mughal troops to occupy the country about Saháranpur. Najib Khan was an Afghán of the Kumrkhel tribe, who had in his early youth come from the mountains of Kandahar to seek his fortunes under his uncle Bisháráth Khan. With him he entered the service of Ali Muhammad, of the tribe of Roh, who was then

settled in Katehir, and received, in reward for his services, a small *jāgīr* in the north-west of Rohilkhand, in the district now known as Bijnor. Hero he became independent, and received the daughter of Dúndi Khán, another Rohilla leader, in marriage. On the outbreak of the quarrel between Safdar Jang and the Emperor, when the former called upon Háfiz Rahmat Khan, the Rohilla leader, to fulfil the terms of an offensive and defensive alliance that had been agreed upon between them, and the latter conceived it to be his duty to simply withdraw his forces, the Emperor's agents offered large sums of money to induce the Rohilla Sardárs to enter his service. Najíb Khán, who then commanded one hundred horse, was the only one who accepted the bribe; but when the private soldiers saw that large rewards were bestowed on those who adopted the Emperor's cause, they flocked to the standard of Najíb, who soon found himself in command of two thousand men.¹ In the battle of Kotila (or Kohtala), which shortly afterwards took place, Najíb Khán behaved with great gallantry, and slew with his own hand Indargír Gosháin, the leader of Safdar Jang's forces. In reward for this exploit, he received Saháranpur, Búrhána, and all the villages of the Sayyids of Bárhá, in *jāgír*. It was on this account that Gházi-ud-dín chose Najíb to represent him in the Duáb; and to still further attach him to his interests, promised him the remainder of the districts bordering on his *jāgír*, then held by Intizám-ud-daulah.

Najíb Khan, after the downfall of Ahmad Sháh, repaired to the court of the new Emperor, and so ingratiated himself with those in power, that when Ahmad Shah Abdáli invaded Dehli and permitted Alamgír to choose his own ministers, Najíb Khan was made Bakshi of the empire, with the duty of collecting the revenues. It is said that Najíb Khan, on taking possession of his new office, expelled the females of Gházi-ud-dín's household from their home; and this act so enraged the Vazír that, on the departure of Ahmad Shah, he invited the Marhatta leaders Raghunáth Rao and Malhar Rao Holkár from the Dakhin, and joining them with his own forces from Farnkhabad, attacked the royal army. For five and twenty days repeated actions took place, the result of which was that Najíb Khan was confirmed in his *jāgír*, whilst Gházi-ud-dín remained at Dehli. This was a hollow truce, and each of the combatants eagerly waited for an opportunity to crush the other. It was to Sikandarabad, then in the possession of Najíb Khan, that the Prince Ali Gauhar, afterwards known as the Emperor Shah Alam, fled when he escaped from the hands

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¹ This act of Najíb Khán led to a misunderstanding between Dúndi Khán and Háfiz Rahmat Khán, which nearly broke out into open war. The latter accused the former of conniving at Najíb Khan's practical contravention of the terms of the treaty made between Safdar Jang and the Rohillas, and led a force against Bisauli, a *jāgír* belonging to Dúndi Khán; but friends intervening, it was shown that Dúndi Khán, though father-in-law, was not to be held responsible for Najíb Khán's acts.

of Gházi-ud-dín. Najib Khan allotted the young prince a monthly income of £5,000 for his expenses, and treated him with every respect, and endeavoured in every way to induce the Rohillas and others to assist him. Hearing of these intrigues, Gházi-ud-dín again called in the Marhattas to assist him in destroying his hated rival and resuming the *jágir*; and these formidable allies, under Jankoji and Dátáji, arrived at Dehli in 1759. Najib Khan intrenched himself on the Ganges at Shukartár, and, in his turn, solicited aid from the Rohillas and the Viceroy of Oudh, whose combined forces marched from Bareilly in November, 1759, and, on reaching Hasanpur, heard that the Marhattas had made preparations for crossing the river. Bakshi Sardár Khan was at once despatched to oppose them, and others were directed to follow. On his arrival at Sabalgarh the Bakshi found that a large body of the enemy had already crossed, and throwing himself into a fort, awaited the arrival of the reinforcements.¹ On their approach the enemy retreated; and, hearing of the advance of Ahmad Shah from Kábul, consented to execute a treaty of peace, which was of no long

Ahmad Shah. continuance. Ahmad Sháh, marching along the foot of the hills, crossed the Jumna opposite Saháranpur

and entered the Duáb, where he was joined by Najib Khan and the other Rohilla chiefs, and, crossing the Jumna at Bágpát, defeated the Marhattas and proceeded to Dehli. Najib Khan was again appointed Bakshi of the Empire and guardian of the Prince Mirza Jawan Bakht, who then represented Sháh Alam at Dehli. We next hear of Najib Khan intriguing with Shúja-ud-daulah against the Afgháns of Farukhabad; and again, in 1746, defending the Duáb against the Bhartpur Játs, who had advanced as far as Tappal in the Aligarh District. The Játs had previously been

The Játs in the Duáb.

in possession of these districts, but had been expelled by Ahmad Sháh, who parcelled out the Duáb amongst his Rohilla allies. The fief of Sikandra was conferred on Najib Khan, and thus his possessions became nearly conterminous with the present Meerut Division. The Játs now sought to recover their authority in the Duáb; and in the campaign against them, Najib Khan, from the smallness of his force, thought it best to retire northwards. Súraj Mal followed with a small force as far as Shahdara on the Hindan, in the Meerut District, where there was an old hunting seat of the Emperor, and the main body, under his son Jawáhir, occupied Sikandra. Whilst enjoying the pleasures of the chase at Shahdara, Súraj Mal and his party were surprised by a squadron of Mughal horse, who succeeded in killing the whole party, including their leader. The head of Súraj Mal, displayed as a standard, struck such terror amongst the Játs in the battle that followed, that they were thoroughly routed and driven back to their own country. Six months afterwards

¹ The *Siyár-ul-Mutakheem* states that the Marhattas crossed the Ganges, destroyed 1,300 villages, and obliged the Rohillas to fly to the hills of Kumaon.

Jawáhir Mal renewed his attacks on Dehli with the aid of Malhar Rao Holkár, and, surrounding the city, cut off all supplies of grain. Najíb-ud-daulah fortified the city as well as he could, called in his Duáb levies and his allies the Rohillas, and wrote to Ahmad Shah, at Kandahár, for assistance. At the same time the Sikhs took advantage of Najíb's absence to invade Saháranpur; and as

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they even threatened the Rohilla country, the Rohilla leaders despatched at once a force of 6,000 horse to expel the Sikhs, and with the main body marched towards Dehli. Jawáhir Mal and Malhar Rao, on hearing of the approach of the Rohillas on the one side and of Ahmad Shah on the other, at first redoubled their attacks on Najíb Khan's small force; but when the reinforcements approached nearer, Malhar Rao marched off to his own country, and the Játs to Díg. Relieved from these enemies, Najíb Khan again devoted his attention towards organising an expedition against the Farukhabad Patháns, and for this purpose invited a large Marhatta force under Madhoji Sindhia, Túkají Holkar, and Ramchandra Ganesh, to invade the Central Duáb. Zábita Khan, the son of Najíb, was sent as his representative to

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the Marhatta camp; but before anything could be accomplished, Najíb Khan died at Hápur in the Meerut District, and his remains were carried to Najíbabad, and deposited in a mausoleum erected to his memory.

Zábita Khan escaped from the Marhatta army and joined his father's forces, then encamped near Farukhabad, by whom he was received and acknowledged as chief, to the exclusion of his half brothers Malu and Kalu. The Farukhabad Patháns now joined with the Marhattas, and induced Shah Alam to leave Allahabad and proceed to Dehli (December, 1771,) under their joint protection; and at the same time every effort was made to prevent Zábita Khan from assuming the power and influence which his father had so long enjoyed. Faizullah Khan, Rohilla, whose sister had

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married Zábita Khan, was employed to dissuade the latter from attempting to oppose the wishes of the Emperor and the Pathán-Marhatta confederacy; but disregarding advice and threats alike, Zábita Khan proceeded towards Dehli, and encamped at Shukartár. The royal army now approached, the Marhattas in the van and the imperial troops under Mirza Najf Khan in the rear. Zábita Khan drew out his forces a few miles in advance of his entrenchments and offered battle to the Emperor's troops. The combat was bloody, the Rohilla leaders, Saádat Khan and Sayyid Khán, behaved with great gallantry, but the former being killed by a cannon ball, his troops gave way, and the defeat of the entire Rohilla force was followed by the plunder of their artillery, baggage, stores and military chest. The Marhattas appropriated the spoil to their own use, and crossing the Ganges, captured Najíbabad and Najfgarh, while the royal army marched

upwards though the Duáb, and expelled all the Rohilla garrisons excepting Ghausgarh. The family of Zábíta Khan fell into the Emperor's hands, and amongst them his eldest son, named Ghulám Kádír, who is said to have been transmuted into a haram page by the Emperor's order, and who lived to exact a fearful revenge for the injury done him. In the meantime, Zábíta Khan intrigued with the Marhattas, who agreed to restore him to his former dignities in consideration of his advancing them a large sum of money. The money having

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been paid, the Marhattas proceeded to Dehli, and after a bloody contest with the troops of the Emperor, took possession of the city. Zábíta Khan was pardoned and presented with a dress of honour, and was not only reinstated in his government at Saháranpur, but was officially confirmed in the appointments of Bakshi of the empire and Amír-ul-Umara so long held by his father. Najf Khan, however, still remained nominally Commander-in-Chief.

Zábíta Khan remained for some time at his forts of Ghausgarh, Shukartár and Pathargarh, reducing the country to order, and establishing his authority amongst the villages occupied by the Gújars and Pundírs, who during the recent troubles had assumed an independent attitude. The Sikhs from the west, too, engaged much of his attention; but having once brought his affairs into order, he

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conceived himself at liberty to withhold the stipulated tribute from the royal treasury, and prepared to resist any attempts to levy it by force of arms. Abdul Kásim Khán was sent against him; and Zábíta Khan, then posted in Ghausgarh, marched out and offered the imperial troops battle. A desperate fight took place, in which the Emperor's army was on the point of proving victorious, when a body of Pathán horse, which had been planted in an ambuscade, rushed out, and attacking Abdul Kásim's forces in the rear, utterly discomfited them. The commander himself was slain, and but few of his troops escaped.

Inflamed by his success, Zábíta Khán now took large bodies of Sikhs¹ into his pay; and resolving to persist in his rebellion, actually threatened Dehli itself with a siege. The imperial troops under Mirza Najf Khán were then engaged in the Ját country, from which they were recalled, and the Emperor himself prepared to lead them against the rebel; but first resolving to see what could be effected by

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diplomacy, he sent an embassy, consisting of Raja Dya Rám; the Gosháin leader, Hímmat Bahádúr; and the Ondh envoy, Latáfat Khán; in advance of the imperial army to Ghausgarh. Though they failed to induce Zábíta Khán to abate one whit of his pretensions, yet the Emperor was so unwilling to come to an open rupture, that on the

¹ It is said that Zábíta Khan not only formed alliances with the principal Sikh chiefs, but even embraced the tenets of the Sikh religion, and became a convert to their faith. (Fraucklin's Shah Aulum, 71.)

mere semblance of submission he pardoned the rebel and confirmed him in his government. In addition to this, Mirza Najf Khán took the Pathán's sister to wife, and his follower, Najf Kúli Khan (a converted Rajpút), married Zábita's daughter.

It was at this time (1778) that Walter Reinhard, also known as Sumru or Sombre, was placed in charge of the country adjoining Zábita Khan's lands, and fixed his head-quarters at Sardhana in the Meerut District. The Kashmíri Abdúl Ahíd Khán, known by his title of Nawwáb Majad-ud-daulah, is said to have been privy to Zábita Khán's alliance with the Sikhs; but so well did he keep his connivance secret, that he was chosen to command the imperial army raised to expel the Sikhs from Sirhind in the following year (1778-79). The Prince Imperial, Jawán Bakht, accompanied the army, which was at first successful, but subsequently, owing to the treachery of Majad-ud-daulah, was surprised by a Sikh force at Patiyála, and driven back to Pániapat. The Sikhs then divided into several parties, and, crossing the Jumna, entered the Upper Duáb, where they committed everywhere acts of cruelty, devastation and death. Mirza Najf Khán was again sent for to take the place of Majad-ud-daulah, now disgraced and imprisoned, and with the titles of Zulfakár-ud-daulah and Vakíl-i-Matlak, became absolute director of all affairs at Delhi.

At the commencement of 1780, preparations were made to take the field against the Sikhs, who now for some months had remained in possession of the Duáb. A large force under Mirza Shafi, a young nobleman of great promise, and nephew of the Captain-General, crossed the Jumna in quest of the enemy. After several ineffectual skirmishes and much desultory fighting, he succeeded, about the middle of August, in bringing them to a decisive action before Meerut. The imperial troops, eager to wipe of the disgrace of their defeat in the previous year, exerted themselves to such good effect, that the Sikh forces were completely routed, with the loss of their leader and 5,000 men, and at once evacuated the country. Mirza Shafi's next care was to settle the country, and finding the people utterly unable to pay up the taxes for the year during which the Duáb was occupied by the Sikhs, he remitted them in the Emperor's name.

Mirza Najf Khán died in the month of April 1782, and amongst the competitors for the vacant post of head of the administration, the principal were Afrasyáb Khán and Mirza Shafi. The former was the adopted son of the deceased minister, and the latter was his nephew, and held command of the Panjáb. Each prepared to support his respective pretensions by force of arms, but Afrasyáb Khán first succeeded in obtaining for a time the insignia of Amír-ul-Umara. He then released the Kashmíri ex-minister Majad-ud-daulah, and placed him and Najf Kúli Khan in charge of the citadel.

Afrasyáb Khan then proceeded to Agra, where Muhammad Beg Hamadáni had attempted to make himself independent. Whilst on his way news arrived that Mirza Shafi had entered Dehli, seized the citadel, and confined the officers who had been left in charge. Afrasyáb thereupon resolved to make peace with Muhammad Beg, and uniting their forces both marched towards Dehli. In the meantime a counter-revolution took place there, which totally changed the complexion of affairs. The Prince Jawán Bakht aspired to the office of Captain-General, and finding himself supported by M. Paoli, the commandant of Began Sumru's brigade, Yákúb Khán, Latáfat Khán and other nobles, he induced the Emperor to take the field against Mirza Shafi. The latter, finding himself unable to meet the imperial forces, released Majad-ud-daulah, and with him proceeded to the camp of his whilom inveterate foe Afrasyáb Khán. These strangely assorted allies met at Muttra, and there agreed that the effects of the late Najf Khan should be equally divided between Mirza Shafi and Afrasyáb Khan; that the former should be reinstated in the post of Vazír; and that the latter and Muhammad Beg should be left in possession of the Duáb from Koil southwards. Their united forces then marched towards Dehli, and Majad-ud-daulah was sent to the Emperor with their ultimatum. The Emperor appointed Prince Jawán Bakht, Latáfat Khán, and M. Paoli to negotiate on his part; but the unfortunate ambassadors fared ill: M. Paoli was assassinated by command of Muhammad Beg, and Latáfat Khan was taken prisoner, deprived of his sight, and thrown into prison. The Prince alone escaped, but found himself obliged to accompany the conspirators, as if a voluntary actor, in their triumphal entry into Dehli.

The next scene in this real drama¹ of the "Reward of treachery, or the
 1783 A.D. unscrupulous Mogul" rises on a quarrel which broke
 out between Muhammad Beg and Mirza Shafi. By
 the convention of Muttra, the former was entitled to a share of the southern Duáb; but Mirza Shafi refused to carry out this portion of the compact, and further incensed the entire body of the Mughal nobles by avowing his intention of resuming the lands held by them on condition of military service. Dissembling his resentment for a time, Muhammad Beg joined the camp of Afrasyáb Khán, and induced the latter to invite the Mirza to a conference to settle all their difficulties. Mirza Shafi, attended by a few followers, came on his elephant, and whilst embracing Muhammad Beg, was stabbed from behind by Ismáíl Beg, the Hamadáni's nephew. Afrasyáb Khán was at once promoted to the office of Amír-ul-Umara, whilst Zain-ul-abdín Khán, the brother of the murdered nobleman, was ordered to give up the Governorship of Meerut, which he then held. Afrasyáb Khan advanced to Meerut to enforce these orders, but by

¹ The name actually given to a piece in which the principal events of this period were dramatised.

the advice of his principal officers first tried the effect of negotiations, with the result that Zain-ul-abdīn was induced to throw himself on the Emperor's clemency, and give up the Meerut command, which was then bestowed on Kutb-ud-daulah. Zain-ul-abdīn then proceeded to Dehli, where he was formally pardoned, but at the same time kept in a sort of honourable confinement in his own house.

Early in 1784, Mr. Hastings, the British Governor, arrived at Lucknow, and sent Major Brown as his agent to the Dehli Court.

1784 A.D.

Mirza Jawān Bakht, considering this a good opportunity for attempting to induce the British to interfere on behalf of his father, succeeded, with the aid of a body of Gújars, in making his escape to Lucknow. The presence of the British agent at Dehli was partly due to the natural desire of Mr. Hastings to procure more accurate information regarding Dehli politics than the confused and contradictory rumours that reached him afforded, and partly to his wish to arouse the Dehli Court to make some exertions to stem the tide of Sikh invasion which now threatened to involve the whole Duāb in one common destruction. Afrasyāb Khan induced the Emperor to order the return of the Prince, and determined, if he once again got hold of the heir to the throne, to effectually prevent his ever after giving any trouble. Muhammad Beg, too, felt the minister's resentment, and went into open rebellion; whilst Majad-ud-daulah, notwithstanding his great services, was imprisoned in the fort of Meerut. Under these circumstances, Shah Alam, finding himself a mere puppet in the hands of whichever faction chose for the moment to assume the direction of affairs, commenced to intrigue with Sindhia, and in this course of action he was encouraged by Afrasyāb Khan, who hoped by means of the Marhattas to rid himself of his rival Muhammad Beg.

Early in 1784, the Emperor, accompanied by Afrasyāb Khan, marched to Sindhia arrives at Agra. Agra, whilst the Marhattas, advancing from the west, encamped at Fathepur, and, opposed to both, lay the forces of Muhammad Beg Hamadāni, some forty miles off. Sindhia now found himself appealed to by all three. To Muhammad Beg he granted an interview; and appearing to be satisfied with the explanations which were made, he promised his good offices in procuring the Emperor's pardon for the offender. A few days later, in November, at an interview with Afrasyāb Khān, Sindhia laid down a plan for a combined attack on Muhammad Beg. Zain-ul-abdīn, the ex-commandant of Meerut, had been released from confinement through the influence of Sindhia, and burning to avenge his brother's death and his own disgrace, hung about the imperial camp. He accompanied the chiefs to the interview with Sindhia, and after the ceremony was over, and Sindhia and the other officers had taken leave, there remained no one in the tent except Afrasyāb Khān and Zain-ul-abdīn. The latter entered into conversation with the minister, and professed his strong

desire to live in future on a more amicable footing, that all past differences should be forgotten, and that each should consider the interest of the other to be the same as his own. Afrasyáb Khán, puzzled at this sudden reconciliation, remained for sometime absorbed in silence. When about to reply, Zain-ul-abdin rose up from his seat, and, at this signal, one Mahdí Beg rushed in and stabbed the minister in the breast. Afrasyáb Khán expired on the spot, and his assassins found refuge in Sindhia's camp, whilst Himmat Bahádur, the Gosháin leader, and other Mughal officers, repaired to Sindhia's tent, and offered him their congratulations as if he had already been appointed Vazír.

While these events occurred at Fatchpur, the Emperor was at Agra, and was there joined by Majad-ud-daulah, who found means, not only to effect his own release from prison, but to induce Kutb-ud-daulah, his jailor, to accompany him to Agra. Shah Alam received his old friend with great kindness, and would most probably have taken him into favour and restored him to his former office again, had not both Raja Daya Rám, and Shuja Dil Khán, the Governor of Agra, endeavoured to arouse suspicions of the Kashmíri's fidelity in the Emperor's mind. The insolent manner in which they urged their remonstrances showed that they, as the partisans of Afrasyáb Khan, believed that the Emperor was entirely in the power of their faction, and this not a little contributed to the desire Shah Alam showed to escape from their hands. In order to blind his keepers, the Emperor ordered a great portion of his family to remain behind, and, taking Majad-ud-daulah with him, proceeded to Dehli. Sindhia entered Agra, and sent for Muhammad Beg, on whom he conferred a *jágr* of Rs. 16,000 a month from the revenues of Shikohabad, and, further, gave him employment in the Dakhin. Sindhia proceeded from Agra to Dehli, where, in January, 1785, he was invested in full darbár with the office of Amír-ul-Umara, whilst the Peshwa, for whom he professed to act, was honoured with the title of Vakíl-i-Matlak, or plenipotentiary of the Empire. As may be supposed, during the late troubles the administration had fallen into the utmost disorder, and the first care of the new minister was given to the improvement of the finances. The collection of the revenue had for several years been in the hands of Raja Daya Rám; but his behaviour towards the Emperor at Agra determined Sindhia to remove him from that office, which was accordingly bestowed upon Naráyan Dás, a person of great capacity and of some skill as a financier. Sindhia next reduced Agra and Aligarh, and with the capture of the latter fortress acquired the immense accumulations of specie and jewels that a long course of plunder had allowed Afrasyáb Khán to make. At the close of the year 1785, Zábíta Khán died, and was succeeded by his eldest son, Ghulám Kádír Khán. Sindhia was master of the whole of the Central and Southern Duáb. Muhammad Beg

was powerless, and, deserted by his troops, was only too glad to accept anything that the new Amír might give him. Mr. James Anderson was the British envoy with Sindhia, and Colonel Harper filled a similar office at the court of the Nawáb of Oudh, who was still titular Vazír of the Empire. Sháh Nizám-ud-dín was appointed superintendent of the royal household, for which a provision of £120,000 a year was allotted.

We must now return to Saháranpur affairs. Zábita Khán, after a long life of alternato success and misfortune, marked by the evils
 Ghulám Kádír Khán. resulting from an ill-tempered judgment and a naturally restless disposition, died unnoticed and uncared for in the year 1785. He was succeeded by his eldest son, Ghulám Kádír Khán, the same who is said to have received such unpardonable injuries at the hands of the Emperor during the Shukartár campaign in 1772. He was a youth of a proud, cruel and ferocious disposition, and at once showed his true character by dispossessing Afzal Khán, brother of Zábita Khán, of the lands that had long been in his possession, and by seizing upon his effects. Ghulám Kádír then proceeded to assume all the insignia of independence, and proclaimed himself ruler of the Upper Duáb under the name of Najíb-ud-daulah Hoshyár Jang. Affairs to the west of the Jumna so occupied the attention of Sindhia, that Ghulám Kádír was allowed to consolidate his power and act as he pleased. The Jaipur prince, assisted by Ismaíl Beg, the nephew of Muhammad Beg, defeated Sindhia himself and laid siege to Agra. At the same time Raja Daya Rám fomented the discords that prevailed amongst the Mughal nobles, and detached them from the Marhatta cause; but falling into the hands of Sháh Nizám-ud-dín, Sindhia's Deputy at Delhi, the intriguer was trodden to death by elephants in the royal presence. Delhi was placed in a state of siege, and every preparation made to meet the storm which the Marhatta party felt must sooner or later fall upon them.

The need of these precautions was soon shown. Ghulám Kádír having, during the last two years, raised and disciplined a
 Ghulám Kádír attacks Delhi, 1787 A.D. considerable force, resolved to make the Empire at large pay for their support, and, marching down the Duáb, encamped opposite Delhi towards the close of the year 1787. He was encouraged in this step by letters received from Mansúr Ali Khán, Názir of the household and a confidant of the Emperor, which urged him to come and demand the vacant office of Amír-ul-Umara. Shah Nizám-ud-dín and the Desmukh, a son-in-law of Sindhia, in command of the Marhatta force, were inclined to under-estimate the importance of the crisis. They contented themselves with sending small detachments across the river, with orders to attack the force of Ghulám Kádír. The result was, that their troops were defeated with great slaughter, and both the leaders fled to Gwalior. Ghulám Kádír at once crossed the Jumna, and was introduced

into the palace by the treacherous Názir. He then demanded the appointment he sought, and the wretched Emperor, seeing himself without resource, was obliged to confer on this arch-rebel an office which now seems to have belonged to any one bold enough to attempt to secure the Emperor's person. Amongst those who, at this time, preferred the existing state of affairs, and had some regard for the Emperor's dignity, was the Begam Sumru, who, on the death of her husband, the infamous Sumru, had succeeded to the command of the disciplined battalions he had raised, and to the possession of the lands granted for their maintenance.

The adventurer known by the name of Sumru or Sombre¹ was a butcher by profession, a native of Salzburg, or some say Troves, in the Duchy of Luxemburg. His real name was Walter Renard or Reinhard. He came to this country as a soldier in the French army, and deserting that service took employment with the British, where he attained to the rank of sergeant. Deserting again, he joined the French party at Chander nagore, and, on the surrender of that settlement, accompanied M. Law in his wanderings throughout India from 1757 to 1760. In the latter year Law's party joined the army of Shah Alam in Bengal, and remained with the Emperor until his defeat in 1761, when M. Law was taken prisoner and his European troops were dispersed. We next find Sumru in the service of Mír Kásim, by whom he was employed to murder the English prisoners at Patna, in October, 1763. He then escaped into Oudh, and after some time took service in Bundelkhand. We next find him in the Ját country, where he served Mirza Najf Khán. Deserting him, Sumru entered the service of Straj Mal, the Ját leader, with a battalion of disciplined infantry, a detail of artillery, and some three hundred Europeans, the dross of all countries and nationalities. From the Játs he went to the Marhattas, whom he served for several years, but deserted to the Imperial army after the battle of Barsína in 1775.

In 1777, Mirza Najf Khan again took Sumru into his service, and, in addition to his own battalions, gave him command of a body of Mughal horse. For the support of the whole he assigned him the pargana of Sardhana and the adjacent lands, then valued at six lakhs of rupees a year. On the death of Reinhard, in 1778 A.D., his force was maintained by his widow. This remarkable woman was the daughter, by a concubine, of Asad Khán, a Musalmán of Arab descent, settled in the town of Kutána in the Meerut District. She was born about the year 1753 A.D. On the death of her father, she and her mother became subject to ill-treatment from her half-brother, the legitimate heir, and they consequently removed to

¹ The name Sombre is said to have been given to him from his gloomy disposition; whilst others say it arose from his assuming the name of Walter Summers. The latter account gives the more probable origin of the name.

Delhi about 1760. There she entered the service of Sumru, and accompanied him through all his campaigns. Sumru, on retiring to Sardhana, found himself relieved of all the cares and troubles of war, and gave himself entirely up to a life of ease and pleasure, and so completely fell into the hands of the Begam, that she had no difficulty in inducing him to exchange the title of mistress for that of wife. Having attained to this dignity, she perseveringly exercised the rights thereby attained, to raise herself to the actual enjoyment of all the powers derived from Sumru's political position. Sumru died in 1778, and was buried in the Roman Catholic cemetery at Agra, where his tomb still exists.¹

Sumru left a son, Zafaryáb Khan, by a concubine named Baha Begam, but his widow assumed the management of the estate and the command of the troops, which now numbered five battalions of sepoy, about 300 European officers and gunners, with forty pieces of cannon, and a body of irregular horse. In 1781 the Begam was baptised, according to the ritual of the Roman Catholic Church, under the name of Johanna. Her troops were at this time commanded by a German named Paoli, who intrigued with the Prince Mirza Jawán Bakht against the Shafi and Rohilla faction, to raise the Prince to the dignity of Amír-ul-Umara, and, as we have seen, was assassinated by order of Muhammad Beg Hamadáni in 1783 A.D. After the murder of Paoli, Messrs. Baours, Evans, and Dudrence successively commanded the Begam's forces, which were principally occupied in opposing the inroads of the Sikhs. In 1787 George Thomas entered the Begam's service at Delhi. Sumru's party was never famed for their military achievements. They never gained a gun and never lost one until they were defeated by the British at Ajanta Ghát. Sumru was distinguished for his excellent retreats. He was accustomed to draw up his men in line, fire a few shots, form a square, and retreat, so that if his corps gained no laurels, they preserved their reputation. His troops were the most mutinous in India, and are said to have frequently attacked their own officers and beaten them with clubs, whilst on more than one occasion Sumru was tied astride a gun, and exposed to the mid-day heat, to compel him to obey their wishes.

Having brought the history of the Sardhana fief down to the year 1787, I shall proceed with the main story. Ghulám Kádir, on obtaining his patent of

Ghulám Kádir made office, opened communications with the Begam, then Amír-ul-umara, operating against the cis-Satlaj Sikhs. He offered her,

¹ The inscription on it runs thus—

AQUIIAZ.	EO AOS 4.
OWALT.	DE MAYO.
ERREINHA.	NO ANNO.
RD MORR.	DE 1778.

not only an extension of her *jâghir*, but even an equal share in the administration of affairs, if she would support his authority. Well versed in eastern politics, and well acquainted with the Afghán character for treachery, the Begam repulsed these offers with scorn, and advanced with her troops to the capital. Here she was received as the saviour of the imperial cause, and so intimidated the rebels that they withdrew across the Jumna. From thence Ghulám Kádír demanded the dismissal of the Begam and her troops; and on this not being granted, opened fire upon the palace itself. For some time desultory skirmishes took place, and though Najf Kuli Khan came to the assistance of the Emperor, little impression was made on the rebel's force. Marching down the Duáb, Ghulám Kádír possessed himself of Aligarh, and, uniting his forces with those of Ismáíl Beg, defeated Rána Khán, the Marhatta General, at Cháksú. Mansúr Ali Khán, faithful to his friend Ghulám Kádír, refused to supply the Emperor's purse, and conveyed intimation to the enemy that the Prince Jawán Bakht was approaching, with a large force, to relieve the city. He further advised that Ghulám Kádír should embrace this opportunity to make terms whilst he was still able. Profiting by this counsel, the Rohilla signified his sorrow for his late conduct, and offered to restore the lands in the Duáb that he had lately usurped. These offers, backed by a handsome present in ready money, of which the imperial treasury stood in much need, were accepted; and the rebel marched back to Saháranpur, with the confirmation of his appointment as "first of the nobles" in his hand.

The conduct of Sindhia during this time needs explanation, and the materials available do not afford anything that can be considered satisfactory. On establishing his authority in Upper India, Sindhia found that the greater portion of the State lands was parcelled out amongst the Mughal nobles on condition of military service, and resolved to carry out the project attempted by Mirza Shafi and others, and resume these grants, paying those employed in the army from the public funds, and devoting the revenues of the resumed lands to this purpose, and to the support of a standing army raised and disciplined in the European fashion. The design was carried out, but not without considerable murmurs, which nothing but the presence of an overwhelming Marhatta force prevented from breaking out into open rebellion. Naráyan Dás, too, was removed from the superintendence of the revenue, which was conferred upon Shah Nizám-ud-dín, whilom superintendent of the imperial household. In this critical time of doubt and uncertainty, matters were brought to a crisis by the action of the Jaipur Prince, who induced Muhammad Beg to join him, and, on his death in battle, Ismáíl Beg, his nephew, became the head of the discontented Mughals. In the war between Sindhia and the Raja of Jaipur, small bodies of Mughal troops, led by men whose lands Sindhia had resumed, continually deserted to the enemy,

and in the end he had none but his own countrymen to rely upon. Numbers proving too much for him, Sindhia retired to Gwalior to await reinforcements, and for a time was powerless to prevent the advance of the Rohilla adventurer. These facts, we may fairly infer, were the causes which led to the inaction of the Marhattas during the eventful year 1787.

In the beginning of 1788, Sindhia prepared to cross the Chambal, whilst the

1788 A.D.

Emperor himself also awoke to new life, and commenced a royal progress throughout the territories close

to the capital. The Raja of Jaipur was compelled to yield the usual tribute, and Najf Kuli Khán was invested in his strong fortress of Gokalgarh. The latter had

Siege of Gokalgarh.

the presumption to demand the office of Amír-ul-Umara as a condition of his submission; and were it not for the

urgent representations of some of the few faithful friends of the court that still remained, the Emperor would have consented to the arrangement, especially as the proposition was coupled with the offer of £60,000 in ready cash as the fine on investiture. The imperial troops comprised, at this time, several battalions of half disciplined levies known as *najibs*, the body-guard called the red battalion, a considerable force of irregular horse, and three battalions of disciplined infantry from the Sardhana fief, under the command of George Thomas, with a respectable train of artillery. Najf Kuli Khán himself lay in an intrenched post at about a mile from the fort. The Gosháin Raja, Himmát Bahádúr, commanded the force opposed to Najf Kuli, and the Emperor himself invested the fort with the main portion of the army. The Gosháin's forces were, for the most part, a rabble composed of the dregs of the armies of all the nations of India. He had only two disciplined battalions under a Danish leader, Colonel Meiselback, that did good service both here and in Bundelkhand.¹ The officers of his force, accustomed to riot and debauchery, could not bear the unwonted labour of the trenches, and, forgetful of the danger of their situation, continued to indulge themselves to excess. The soldiers soon followed the example of their leaders. Najf Kuli being informed of this state of things by his spies, selected a strong detachment of cavalry, and made a night attack on the Gosháin's quarter. The lines were instantly carried, and such a general slaughter took place that any possibility of a rally was prevented. The terror caused by this sudden attack communicated itself to the main body, who began to prepare for flight, and for this they were the more ready when they found that Mansúr Khan, who commanded in Gokalgarh, had, by an arrangement preconcerted with Najf Kuli, slipped out of the fort, and attacked the imperial camp in the rear.

Shah Alam and his family were now in the greatest danger. Their tents

Gallantry of the Begam.

were struck and removed to the advanced guard commanded by Shah Mír Khán, who endeavoured to rally

¹ See Gazetteer Index, Vol. I, under 'Meiselback'.

the flying troops. The Sardhana brigade, under the command of George Thomas, and with the Begam in person present, now greatly distinguished itself. At the first alarm they drew up as if on parade, and the Begam sent a respectful message to Shah Alam, desiring him to repair to her quarters, and she would punish the rebel or die in defence of the imperial cause. At the same time she wrote to Najf Kuli, upbraiding him for his conduct, and threatening him with exemplary punishment should he persist. She then placed herself in her palanquin at the head of one hundred men, who, led by George Thomas, repeatedly charged the troops of Mansúr Khán, and drove them back to the fort. The imperial leaders had now time to collect their men, and Himmat Bahádur and Shah Mír Khán led the attack against Najf Kuli, who was eventually obliged to retire with heavy loss. The brave Shah Mír Khán was killed on the Emperor's side. Najf Kuli Khán submitted, and in the darbár held for this purpose, the Begam was invested with a dress of honour, and received the title of "daughter of the Emperor" and "Ornament of her sex" (*zeb-un-nissa*), with the parganah of Badsháhpur in *jágír*.

Sindhia, on advancing into the Duáb, sent Ráná Khán to relieve the fort of Agra, which was still besieged by Ismaíl Beg. The latter had previously made engagements with Ghulám Kádir for their mutual support, but the faithless Rohilla had no intention of carrying out his part of the treaty. The consequence of this conduct was, that Ismaíl Beg was defeated and obliged to fly to the Rohilla camp, then at Aligarh. The united forces proceeded northward, and, after expelling Sindhia's troops from the Duáb, marched upon Dehli, with the intention of plundering the imperial palace. The immediate cause for this step was the alleged discovery of a letter addressed to Sindhia by Shah Alam, in which he called on the Marhatta for assistance. The Názir, Mansúr Ali Khan, still held the first place in Shah Alam's counsels, and still kept up a traitorous correspondence with the Rohillas. By his influence, Himmat Bahádur and the few Mughal nobles then at court abandoned the palace and city, and left the Emperor in the hands of the rebels. Ghulám Kádir and Ismaíl Beg, with two thousand Rohillas, took possession of the palace, and forced themselves into the hall of audience, where they found the Emperor, and standing on each side of the throne, obliged him to approve of all their acts. They then dismissed him to the inner apartments, and consulted on their future course of action.

The Názir was admitted to their counsels, and by his advice one Sítal Dás, a sub-treasurer, was sent to Shah Alam, with a message that one of the young princes should be sent to accompany the army against the Marhattas, whilst the citadel and garrison should be immediately delivered up to the Rohillas. To strengthen this proposal, Ghulám Kádir, with his own hand, drew up an agreement, in

Weakness of the Emperor.

which he solemnly swore to defend the person and interests of Shah Alam against all comers. Though Sítal Dás used his utmost endeavours to dissuade the Emperor from accepting these proposals, he was sent back with the agreement ratified by the sign manual, and sealed with the imperial seal. In the meantime the Rohilla troops kept pouring in, and in a short time occupied both palace and fort. The imperial troops were disarmed and expelled, and their officers were placed in confinement. Ghulám Kádír then insolently demanded the keys of the imperial treasury, and when informed that the coffers were empty, prepared to offer the last indignities to the aged Emperor.

Early the next morning, Ghulám Kádír, accompanied by a numerous band of followers, entered the audience chamber, and expelled Shah Alam deposed. all the inmates except Shah Alam. He then sent for

Bedar Bakht, a son of the late Emperor Ahmad Shah, from Salimgarh, and placed him on the throne under the name of Jahán Shah. Shah Alam and his family were transferred to Salimgarh, and his quarters in the palace were occupied by Jahán Shah. The next step was the plunder of the ladies of the haram. Malikah Zamána and Sahiba Mahál, the widows of Mahmúd Shah, first felt the rebel's cruelty. They were ordered to appear, and to them was committed the invidious task of removing the jewellery from the persons of the inmates of the *seraglio*. The spoil produced did not satisfy the inhuman tyrant, who then ordered that those ladies themselves should be plundered of all they possessed, and be expelled from the palace. Jahán Shah himself was next sent on a similar errand, and by menaces and entreaties succeeded in procuring a large amount of jewellery, which he sent on trays to the Rohilla. Dissatisfied with this also, Ghulám Kádír sent for the Emperor and all his family, and sternly demanded the

The Emperor deprived of his sight. imperial treasures. In vain did the Emperor plead his utter poverty and the emptiness of his coffers. Inflamed

by a protracted debauch, which had thrown him into a paroxysm of rage, the tyrant threatened his sovereign with instant loss of sight. "What!" exclaimed the suffering prince, "what! will you destroy these eyes, which for a period of sixty years have been assiduously employed in perusing the sacred Korán?" Regardless of this appeal, the Rohilla caused the Emperor to be thrown down, and planting himself on the bosom of the prostrate prince, transfixed his eyes with a poignard, and expelled him, with every mark of indignity, pale and bleeding, from the audience chamber. This occurred on the 10th August, 1788.

The next to feel what the barbarity of a degraded Afghán could do and dare was the Názir, Mansúr Ali, the treacherous confederate of Ghulám Kádír. Perhaps some compunctions visited even him for his conduct towards his master. On the occasion of the installation of Jahán Shah, when the deposed Emperor cried out in his agony—"Better will it be for Ghulám Kádír to plunge his dagger in my bosom

than load me with such indignity," the Rohilla put his hand on his sword; and had not the Názir restrained him, would then and there have put an end to the Emperor's sufferings. However this may be, the Názir rendered himself an object of suspicion to Ghulám Kádir, who put him into close confinement, and plundered him of all his effects, to the amount of £70,000. In all these acts Ismaíl Beg was a passive participator; but when he asked for a share of the spoil, the Rohilla refused to acknowledge him. Incensed at this, Ismaíl Beg offered his services to the Marhattas, who, under Ráná Khan, advanced on Dehli.

Ghulám Kádir, hearing of the approach of the avenging army, collected all his spoil, and, taking with him the imperial family and the Názir, fled to Meerut. The Marhattas occupied

Dehli, Ismaíl Beg was despatched to act against Gokalgarh, and Ráná Khán and Appákhāndi Rao, with Ali Bahádar from Bundelkhand, invested Meerut. Ghulám Kádir cut his way through the besieging army, and fled towards Saháranpur, but was captured on the way, and handed over to the Marhattas. On refusing to discover the place where he had deposited the spoils of the palace, he was confined in an iron cage constructed for the purpose, and carried in front of the army. Day by day he lost a hand, an ear, or a foot, until death put an end to his sufferings. His confederate, the Názir, was trodden to death by elephants,—both thus dreadfully atoning for their great and many crimes. The Marhattas next reduced the whole of the Upper Duáb, and in their hands it remained until it was conquered by the British.

Shah Alam was again restored to the throne of his ancestors, with an allowance of £90,000 per annum for the support of his household, which was again placed under the control of Shah Nizám-ud-dín. Ismaíl Beg, who had been sent against Najf Kuli Khán, found that in the meantime his opponent had died, and that his widow was in command of the troops. She induced him to take her side against the Marhattas, and for some time their combined forces maintained their ground, until the death of the widow in battle induced her troops to abandon Ismaíl Beg. He then surrendered himself to the Marhattas, and was conveyed a prisoner to Agra, where he died in 1799. Sindhia's next enemy was Holkar, whose forces were almost annihilated in the bloody action of Lakhairi, near Ránúnd, in 1792. In this battle the disciplined troops of Sindhia, under M. deBoigne, greatly distinguished themselves, so that the Marhatta directed their increase to 24,000 infantry and 180 pieces of artillery, and assigned for their support fifty-two districts in the Duáb. Towards the middle of 1793, Sindhia returned to his own country, leaving Gopál Rao as his representative in the north, and M. deBoigne in command in the centre of his new possessions. Sindhia died in February, 1794, at Wanauli, near Poona, and was succeeded by his nephew Daulat Rao. The remainder of the general history of the Upper Duáb may be divided

into a few sections,—the rise of George Thomas, the continuation of the account of the Sardhana fief, the Marhatta administration, and the arrival of the British.

The short and brilliant career of George Thomas distinguishes him amidst the crowd of European adventurers in the Marhatta service who at this time sought their fortunes in upper India. He was a native of Tipperary in Ireland, and came to Madras as a sailor in a man-of-war about 1782. In Madras he deserted his ship to join the forces of some Poligúr chief; and in 1787 made his way to Dehli, where he entered the service of Begam Sumru. Here he distinguished himself at the siege of Gokalgarh, and remained at Sardhana until 1792, when LeVaisseau, the commandant of the Begam's artillery, who had always been the rival and bitter enemy of Thomas, succeeded in supplanting him in the Begam's confidence. Thomas, ill-brooking his disgrace, resigned his employment, and betook himself, to the town of Anúpsahr, then a frontier-station of British troops. He had not been long here, when overtures were made to him on the part of Appákandi Rao, the Marhatta Governor of the trans-Junna territory, who, at this time, sought to establish his authority in Ismaíl Beg's former *jágr* of Mewar. Thomas accepted the Marhatta service, and in a short time so distinguished himself, that his employer presented him with several parganahs in *jágr* as a reward for good and faithful service,—the latter a novelty in Marhatta politics.

The gift, however, was not so valuable as might have been expected. These parganahs were inhabited by a wild and warlike race, living in fortified villages, and accustomed to oppose all comers, whether with cause or without cause. It took Thomas many months and much hard marching and fighting to reduce them to even a semblance of submission, and this only lasted whilst he was within reach. Though an unprofitable field as a source of revenue, his *jágr* gave Thomas an excuse for keeping up a large force, who, by discipline and experience, soon became a body of men that could be relied upon in the field against any of the surrounding tribes. His fame increased, and with it his power, for soldiers of fortune from the Duáb and Rohilkhand continually flocked to his standard, and in a few years he found himself at the head of two well-drilled battalions of infantry, with a complement of irregular horse and cavalry, and a park of field artillery. Begam Sumru, instigated by LeVaisseau, now her husband, sought in every way to injure Thomas, and urged on his Marhatta employers the danger of allowing a man of his character to assume a position of *quasi*-independence. She even marched against him with the entire force of the Sardhana *jágr*; but before reaching his territory, a mutiny amongst her troops and the death of LeVaisseau put an end to the expedition. Whether worked on by the Begam's remonstrances, or actuated by selfish motives of his own, even Appákandi Rao,

Made Warden of the Marches. whose life Thomas, on more than one occasion, had saved, was induced to plot his destruction; but twice the hired assassins failed in their attempts. Notwithstanding that Thomas was well aware of all this treachery, he took no notice of its authors, and was always ready to carry out the orders he received, though frequently their execution was both difficult and dangerous. One of his principal duties was to oppose the invasions of the Sikhs from the west; and in this he was so successful, that Lakwa Dáda, who had succeeded Gopal Rao as the Marhatta commander in the north of the Duáb, assigned him a second *jágír*, and gave him charge of the entire frontier of the present Meerut Division. Whilst thus employed, he returned good for evil by reinstating the Begam at Sardhana, whence she had been driven by a mutiny of her troops; and he also distinguished himself at the sieges of Shámli and Lakhnauti. About this time Appákandi Rao, whilst suffering from an incurable disease, performed the *samádhi* by drowning himself in the Jumna, and was succeeded by his nephew, Váman Rao, whose first desire was to resume the *jágírs* held by Thomas.

Thomas, on hearing of this, retired to his own country, and strengthened himself there by raising more troops and building small forts, to which he might retire, or which might serve as depôts for stores and ammunition. He, at the same time, continued his operations against the Sikhs, whose forces he frequently repulsed. Whilst thus engaged, Váman Rao attacked Jájhar, but retired on hearing of Thomas's approach; and the latter took the opportunity of invading and plundering parganah Dádri, now in the Bulandshahr District, and then held by one Kashmíri Boli, who was justly suspected of being the instigator of Váman Rao's treacherous attack. The breach was further widened by some misunderstanding with Bápú Sindhia, the successor of Lakwá Dádá at Saháranpur, whose troops Thomas defeated in two successive actions. Thomas was now considered dangerous enough to be left alone; and having no money to pay his troops, he led them into the Jaipur and other neighbouring States, where he levied contributions sufficient to satisfy their present wants. This state of things could not continue for long, and he looked about for means whereby he might place his affairs on a more stable foundation.

In 1798, Thomas first formed the design of carving out an independent kingdom for himself, and for this purpose selected the tract known as Hariána, which, from the troubled state of the times, had for some years acknowledged no master. His first efforts against Kanhori were unsuccessful, but persevering in his attacks, he eventually reduced it to submission, and with it the south of the province fell into his hands. In the north the Raja of Patiyála and the Bhatís held out for some time; but by the close of the cold weather, Thomas had extended his authority

as far as the river Sarsúti, and included the important towns of Hási, Hissár, Mahím and Tuhána amongst his possessions. He selected Hási as the capital of his State, rebuilt the walls and fort, established a mint, cannon foundry, and a manufactory of powder and small arms. To attach his soldiers to his service he granted pensions to the wounded, and to the families of those who perished in battle he allowed half the pay drawn by the deceased. It was his desire to put himself in a capacity, when a favourable opportunity should offer, of attempting the conquest of the Panjáb, and he aspired to the honour of planting the British standard "on the banks of the Attock (Indus)." One of his first expeditions was in conjunction with Váman Rao, the Marhatta Sub-Governor of Bulandshahr, against the Raja of Jaipur. The combined forces were at first successful, and captured the important town of Fatehpur; but the Raja, advancing against them with a levy *en masse*, compelled the Marhattas to retire, and eventually to make peace. Thomas was not much more successful in an attack on Bikanír. Towards the close of 1799, he joined with Ambaji Inglia in an expedition against the territories of the Ráná of Udepur, one of the most powerful and important of the Rajpút States. Their object was to expel Lakwá Dádá, the Marhatta commander there, who had joined the Ráná, and acted in opposition to Sindhia's orders in regard to his predecessor's widows, the Báis. In this expedition, chiefly through Thomas's skill, they were successful.

Whilst engaged in Udepur, the enemies of Thomas were not slow to take advantage of his absence to invade Hariána; and, with
 Combination against him. the usual duplicity evinced by those in power, especially amongst the Marhattas, the foremost amongst his assailants was Ambáji, his own colleague, and General Perron, the Marhatta commander in the Duáb. Both concluded that as Lakwá Dáda had fallen in battle, and Holkar's force was completely defeated at Indúr, there was no further need for Thomas's services, and that his growing power would make him a formidable enemy in the event of his interests ever clashing with theirs. Thomas, however, proceeded on his way as if nothing had happened, and the invasion of the Sikhs, and other matters requiring prompt attention on the part of Perron, becoming more pressing, Thomas and his possessions were for a time saved. During this interval of rest, Thomas employed himself in arranging the affairs of Bikanír and Jodhpur, and at the same time he made occasional excursions into the Duáb. His own towns, too, often occupied his whole attention, and more than once he was obliged to sit down and regularly invest Bhawáni, Jamálpur, and others places.

Perron at length took the field against Thomas, with a force of ten battalions of infantry, six thousand horse, a body of Rohillas, and sixty pieces of heavy artillery.

A portion of this force, under Captain Smith, invested Georgegarh, a small fort built by Thomas near Jájhar,
 Perron attacks him. and another, under a Mr. Lewis, advanced on Mahím. Thomas succeeded in

raising the siege of Georgegarh, and defeated Captain Smith, with the loss of his ammunition and baggage; and again, in a battle fought near Baira, he routed the combined forces of Perron, Smith and Lewis, with a loss to the enemy of 2,000 men and thirty pieces of artillery, and a loss on his own side of 700 men, and twenty pieces of artillery rendered unfit for future service. Perron, dismayed at this defeat, made every effort to collect reinforcements from all sides. From Saháranpur came the forces of Bápú Sindhia; from the west a number of Sikh chieftains who had long felt the power of Thomas to be a bar to their plundering expeditions; Meerut furnished a contingent under the Gújar Rajas Randayál and Nain Singh; from Aligarh came the Háthras and Mursán Rajas; Colonel Hession came from Agra; and from the south the Ját ruler of Bhartpur joined the confederate camp with a large following. Thirty thousand men, and a train of one hundred and ten pieces of artillery, now surrounded Thomas on all sides, and so overawed the peasantry of the neighbourhood, that they ceased to bring him in supplies. Many of his own officers, whose families resided within the districts in the occupation of the enemy, were bought over, and carried with them the troops under their command. Conspicuous amongst these were Shitáb Khán, the commandant of Georgegarh, and Khairát Khán, the subahdár of his first

Defeat and death.

matchlock regiment. Unable to meet the enemy in the field, Thomas cut his way through their midst, and succeeded in reaching Hánsi; but here, too, treachery was rife, and he was eventually compelled to yield up the fort, and, with the escort of one battalion of sepoys, crossed the English frontier in January, 1802, and proceeded thence towards Calcutta. He only reached as far as Bahrámpur, where he died on the 22nd August, and was buried in the English cemetery.

Thus closed the career of one of the most remarkable men amongst the many

His character.

that appeared during the troublous times preceding the advent of the British. It was his fixed intention, after consolidating his possessions about Hánsi, to invade the Panjáb and plant his standard on the Indus. This he resolved to accomplish by a fleet of boats, constructed from timber procured in the forests near Firozpur on the Satlaj, by means of which, proceeding down the river with his army, and settling the districts he might subdue on his way, he hoped to reduce the whole country within one or two years. At the same time he offered his services, his territory, and his army to the British, detailing his plans, and declaring that he had nothing in view but "the welfare of his king and country." In the words of his biographer¹ and friend—"Upon the whole, however, we may be justified in remarking that, on a review of the life and actions of this very extraordinary man, it is difficult which most to admire, whether the intrepidity of spirit by which he was incited to the performance of actions which, by their effect,

¹ Franklin's Memoir of George Thomas, London, 1805, p. 338.

raised him from the condition of a private subject to rank and distinction among princes, or the wonderful and uncommon attachment generally exhibited towards his person by natives of every description, who fought and conquered with him in his long and arduous career, and whose assistance exalted him for a time to a height of respectability and consequence that seldom falls to the lot of an individual."

I have already brought down the history of the Sardhana fief to the year 1787 A.D. In that year the Begam was joined by George Thomas, who remained in her service until the year 1792. During this time the Begam obtained great influence in the imperial councils; and, endowed by nature with masculine intrepidity and a correct judgment, she was able to hold her own country and preserve her authority unimpaired under the successive administrations of Najf Khan, Mirza Shafi and Afrásyab Khan. When Sindhia in 1785 became supreme, he added to her possessions certain parganahs on the western bank of the Jumna; and such confidence had he in her ability and integrity, that in the war with Jaipur he committed to her charge the important station of Pá nipat. When Ghulám Kádir invested Delhi, in 1787, the Begam at once marched to the assistance of the Emperor, and, declining all overtures from the rebel, resolutely compelled him to withdraw across the Jumna. Here a reconciliation was patched up between Shah Alam and Ghulám Kádir, and the Rohilla departed to his own country. In 1788, the Begam's troops, as we have already seen, distinguished themselves at the siege of Gokalgarh and in the capture of Meerut. Early in 1792, the Begam began to show a partiality for M. LeVaisseau, or LeVassont as he is also called, a young Frenchman of birth, talents and great pride of character, who had been for some time in her service, which ended in his marrying¹ the Begam privately, in order to bring the corps under his own command. George Thomas at once sent in his resignation and entered the Marhatta service, whilst LeVaisseau set about to reform his turbulent troops.

But not content with the work he had to do at home, he must needs intrigue against Thomas, who was then employed in reducing the districts contiguous to the Begam's trans-Jumna possessions. Thomas retaliated by plundering the Begam's parganahs. In 1793 the Begam, in concert with the Marhatta Governor of Delhi, sent a force to watch Thomas, who retired to Tijára. The Begam then went so far as to bribe the Marhatta officers to advise his dismissal; and a body of Marhattas having joined her army, she marched from Sardhana to Thomas's new district of Jhájhar. Her force then consisted of four battalions of infantry, 20 pieces of artillery, and about 400 cavalry, whilst Thomas had only 2,000 men, with ten guns and 700 cavalry. It was no secret that the expedition was intended to act against Thomas;

¹ The Begam then added the name of Nobilis to Johanna.

but events now took place, which not only induced the Begam to relinquish her intention of attacking Thomas, but ended in the total subversion of her authority for the time.

There was at this time in the Begam's employ a native of Liege, only known by his nick name of Liegeois, who had been for many years an intimate friend of Thomas, and on the present occasion used all his endeavours to bring about a reconciliation. His conduct was highly displeasing to LeVaisseau, who used his influence with the Begam to procure the Liegeois' degradation; and to make his disgrace more mortifying, the place was given to a junior officer, a creature of LeVaisseau's. The soldiers, ever ready for mutiny, sided with the Liegeois, and resolved to effect the downfall of both the Begam and LeVaisseau, who, owing to the privacy with which the marriage ceremony was performed, was looked upon as her paramour. They invited Zafaryáb Khan, the son of the late Sumru, from Dehli, to become their commander. This young man, who has been characterised by a contemporary as "a compound of ignorance, cruelty and debauchery," consented to join the conspiracy, on condition that the deputation sent by the army to invite him should take an oath of fidelity to him on the spot. Having sworn allegiance to their new leader, the rebel troops, with Zafaryáb Khán at their head, proceeded, in May, 1795, towards Sardhana, to which place the Begam and her husband had fled on hearing of the negotiations at Dehli.

Whether from jealousy, satiety, or some other cause, the Begam herself now became as anxious to get rid of her husband as she had formerly been to obtain the sanction of the Church to her passion for him. The rational explanation of her conduct on this occasion would, however, appear to be the discovery that LeVaisseau was unfitted by temperament to manage the unruly body of troops that she was obliged to entertain. To accomplish her purpose, she is said to have got up the revolution that we have just noticed, representing to her husband that a plan had been laid for murdering both herself and him, and seizing on the *jágr*; and urged him, thereupon, to collect all the treasure that could readily be transported, and by flight save both their lives and a portion of their wealth. Having thus far succeeded, she extorted from her intended victim a vow, in which she joined, to the effect that, in case of her flight being intercepted, each party should, by death, secure escape from the probable consequences; and to enable her to effect this, should it become necessary, the lady, as well as her husband, carried arms. All arrangements being perfected, the fugitives, with their treasure, departed under the cover of night; but scarcely had they passed the boundary of her own *jágr*, than they encountered a party of troops, placed in the position which they occupied by order of the Begam. Resistance and recourse to flight seemed alike hopeless, and the report of a pistol from the Begam's *pálki*, followed

by loud cries from her attendants, assured the husband that his wife had performed her share in their mutual agreement. Portions of her garments, stained with blood, were exhibited to confirm the impression, and, under the influence of terror, more probably than of conscientious regard for his pledge, the entrapped victim followed the supposed example of his wife, and with a pistol terminated his life.

Of the actual occurrence of this catastrophe there is no reason to doubt; but the circumstances attending it are so differently related, Thomas's account, that there is much difficulty in ascertaining the real facts. The story, as told by Mundy and Bacon, is given above.¹ George Thomas's biographer² relates that the Begam and her husband were cut off in their intended flight into British territory at the village of Karwa, close to Sardhana, and that the troops who wore with her were promised a free pardon and their arrears of pay on condition of their laying down their arms and giving up the Begam and her husband. In the confusion that arose, and before any resolution could be taken, some shots were fired and a few men were slightly wounded. The soldiers, perceiving they had nothing to hope from the Begam, openly declared themselves for Sumru's son. The infantry then surrounded her palanquin, and demanded her surrender: the cavalry at the same time surrounded her husband who was on horseback. The Begam at that instant drew a poniard from her side, and running the point of it across her breast, drew a little blood, but with no intention of killing herself. Her attendants called for assistance, and LeVaisseau hearing the tumult, demanded to know what had happened. He was answered that the Begam had killed herself. Twice he put the same question, and twice he received the same answer, on which he deliberately shot himself in the mouth.

Sleeman, who had particularly good opportunities for ascertaining the real facts of the case, whilst repeating the story of the compact between the husband and wife "that neither should survive the other," describes the actual occurrence as follows:—"They had got three miles on the road to Meerut, when they found the battalions gaining fast upon the palanquin. LeVaisseau drew a pistol from his holster, and urged on the bearers. He could easily have galloped off and saved himself, but he would not quit his wife's side. At last the soldiers came up close behind them. The female attendants on the Begam began to scream, and, looking into the litter, LeVaisseau saw the white cloth covered with blood. The Begam had stabbed herself, but the dagger had struck against one of the bones of her chest, and she had not courage to repeat the blow. Her husband put the pistol to his temple and fired. The ball passed through his head, and he fell dead to the

¹ Bacon's *First Impressions*, II, 41; Mundy's *Sketches*, I, 371, as quoted by Thornton.

² Franklin's *Life of Thomas*, 59.

ground." On the evidence, as a whole, this may be accepted as the most correct account; and subsequent events would seem to corroborate the opinion that the Begam was not in league with the mutineers. Thomas's account gives no support to the contrary opinion; and had he believed the Begam guilty, he would probably have mentioned his belief to his biographer.

On the death of LeVaisseau, "the villains," says Thomas, "who, the preceding day, had styled themselves his slaves, now committed every act of insult and indignity upon his corpse." For three days it lay exposed to the insults of the rabble, and was at length thrown into a ditch. The Begam herself was carried back to the fort, and stripped of all her property and tied to a gun, and would here have perished of starvation and exposure had she not been attended to by a faithful servant, who supplied all her wants. Released from her terrible position by the good offices of M. Saleur, a gentleman of her army, the Begam was still kept in confinement. Here she found means to communicate with George Thomas, and implored him to assist in her release, promising any sum that the Marhattas would demand if again reinstated in her *jâgír*. On receipt of these letters, Thomas, by an offer of £12,000, prevailed on Bápú Sindbia, the Marhatta Governor of the Upper Duáb, to march towards Sardhana; and in the meantime Thomas himself intrigued with the mutineers, and finding a party amongst them favourable to the restoration, advanced to within a few miles of Sardhana with his own troops. To assist him in his negotiations, he sent a messago, proclaiming that he was come by order of the Marhatta chief to reinstate the Begam. This proceeding had the desired effect. A portion of the troops mutinied, and confined Zafaryáb Khán; but before Thomas could arrive he was again released. Thomas, ignorant of this change in affairs, advanced with a slender escort of only fifty horse, directing his infantry to follow. Zafaryáb Khán, perceiving his opportunity, ordered an attack upon Thomas; but before this could be carried out, the infantry arrived, and the mutineers, thinking the whole Marhatta army was upon them, broke and fled. The Begam was then brought out from her confinement and restored to power, whilst Zafaryáb Khán, stripped of all his property, was reconducted as a prisoner to Dehli, where he died in 1803, and was buried beside his father in the Agra grave-yard.

The Begam paid a portion of the sum stipulated for her release to Bápú Sindbia, and promised the remainder. With the aid of

The Begam at home. George Thomas she arranged her affairs once more, and gave the command of the troops to M. Saleur, an old Frenchman, who had been in the corps since its first formation. Thomas describes the Begam at this time as small in stature, but inclined to be plump. Her complexion was fair; eyes—black, large, and animated. She adopted the Hindústáni costume made of the most costly materials. She spoke both Persian and Urdú, and in

her conversation was engaging, sensible, and spirited. Her house was well built, and furnished partly in the European and partly in the Hindústání style ; but she always followed the customs of the country, and never appeared out of doors or in her public darbár unveiled. Her officers presented themselves in front of the place where she sat, which was separated from the public rooms by a screen, and here she gave audience and transacted business of all kinds. She frequently admitted to her table the higher ranks of European officers, but natives never came within the enclosure. On dinner being announced, twenty or thirty of her female attendants, most of whom were Christians, carried in the plates and dishes, and waited on the guests during the repast.

The darker side of the Begam's character is shown by the story of the slave girl's murder. By some it is said that the girl's crime consisted in her having attracted the favourable notice of one of the Begam's husbands. Whatever may have been the offence, her barbarous mistress visited it by causing the girl to be buried alive. The time chosen for the execution was the evening, the place the tent of the Begam ; who caused her bed to be arranged immediately over the grave, and occupied it until the morning, to prevent any attempt to rescue the miserable girl beneath. By acts like this the Begam inspired such terror, that she was never afterwards troubled with domestic dissensions. She augmented her troops to six battalions in 1797-98, and we next find them fighting on Sindhia's side against the English in 1802. Five battalions marched to the Dakhin, and one remained at Sardhana. At the battle of Asáí, the Sardhana troops, under M. Saleur, lost one battalion and four guns. After the fall of Dehli, the Begam made submission to the British Government, and to the end of her life remained faithful to their interests. In 1825 she showed her loyalty by leading her troops in person to assist the British at Bhartpur (Bhmtpure). She died in the early part of 1836. The description of the Begam's possessions and their history being purely local, will be found under the Meerut District.

Mention has been made of the disciplined corps entertained by Sindhia ; and as the subjugation of the Duáb was principally due to their presence in the Marhatta army, this seems the proper place to give some account of the regular corps in the service of the native princes that have been employed in the Duáb. Sumru's brigade has already been noticed at length, from its having been connected for so many years with the Meerut District, but it never had the preponderating influence or the notoriety of DeBoigne's brigade.¹ Benoit DeBoigne was by birth a Savoyard, and at an early age entered the Sardinian army. This he exchanged

¹ Captain Lewis Ferdinand Smith, a Major in DeBoigne's corps, Captain Franklin and Captain Duff, who were all personally acquainted with DeBoigne, are the principal authorities for these notes.

for the Irish Brigade in France, and finally for the Russian service. He was taken prisoner in the war between Turkey and Russia, and sold as a slave by his Turkish captor. His parents procured his ransom, and he again visited Russia, where he obtained a command in the Greek archipelago. Here he met an English nobleman (Lord Percy), who gave him letters of introduction to Lord Macartney, then Governor of Madras, and Mr. Hastings, then in Bengal. In 1780 A.D. De Boigne came to Madras, and after some service there, proceeded to Bengal, where he was cordially received by Mr. Hastings, and obtained letters of introduction to the Resident at Lucknow. In 1783, De Boigne arrived in Lucknow, where he received a considerable present from the Nawáb. He then went to Agra, and entered the Raja of Jaipur's service. This came to the ears of Mr. Hastings, who immediately ordered DeBoigne to return to Calcutta. DeBoigne obeyed with alacrity, and so ingratiated himself with the Governor, that he was allowed to return to Lucknow, where he set up as a cloth merchant, with considerable success.

From Lucknow DeBoigne again went to Agra in 1784, with Major Browne, the British envoy to the Delhi court, and there began DeBoigne enters Sind-
dhia's service. to turn his attention to military affairs. He found that the Ráná of Gohad was at this time closely besieged by the Marhattas under Madhojí Sindhia, and communicated a plan to the Ráná for the relief of the fort of Gohad, which evinced much military skill, and which might eventually have been successful had not the correspondence been discovered by Sindhia. DeBoigne, disappointed at this untoward circumstance, was in despair; but what seemed to be so prejudicial to him was in reality the foundation of all his subsequent fortunes. Sindhia was so pleased with the talent and boldness shown in the plan formed by DeBoigne, that he consulted Mr. Anderson, the British Resident at his Court, in regard to taking DeBoigne into his service. The result of this was that DeBoigne obtained the command of two battalions in Sindhia's service, to be raised by himself and to be disciplined according to European tactics. These troops were attached to the force commanded by Appákandí Rao, the Marhatta chief who subsequently gave George Thomas his first command. DeBoigne's battalions participated in all the early conquests of Madhojí Sindhia in Hindustán and were chiefly instrumental in gaining the battles of Chaksána and Agra in 1785 and 1786, and the battle of Lálsot in 1788.¹ Sindhia was so pleased with this success, that he ordered DeBoigne to increase his battalions, first to ten, and subsequently to sixteen, with a train of one hundred guns. This was completed in 1790; and shortly afterwards the newly-raised force was engaged in the bloody battle of Pátan Tanwar in the

¹ The Marhattas under DeBoigne, and the Játs under M. Lestoumeaux, were defeated by the Mughals, under Ismaíl Beg, and the Rohillas, under Ghulám Kádír, at Cháksu, about five kos from Bhartpur, April 24, 1788.

Shaikhawati country (20th June), fought against the Rahtors of Jaudhpur, who had been joined by Ismail Beg. The battle was a long and bloody one, and the enemy lost seventy pieces of cannon. They fled thence to Pipar in Jaudhpur, where another force of Rahtors were collected, and here again DeBoigne's forces were victorious (September 12th), in the equally severe battle of Mairtha.

In 1792, at Lakhairi Ghát, in the Búndi country, DeBoigne's sepoy met a similar force, raised and disciplined by the Chevalier Services of the brig- aded. Dudrenec, then in the service of Takúji Holkar. DeBoigne's troops were again successful, and Dudrenec was obliged to retreat, with the loss of nearly all his officers. The result of this battle was that Sindhia became supreme in Hindústán. At Kánand, in the Mewati country, DeBoigne's brigades defeated the combined forces of Najf Kuli Khán's widow and of Ismail Beg. In 1793 DeBoigne received an assignment of lands valued at £160,000 a year, for the support of his troops, and he then formed the third brigade. By this act he made many enemies, and when his old master died, Daulat Rao Sindhia, who succeeded to power, no longer gave him the cordial support that he had hitherto received. In addition to this, his health began to fail, and he was anxious to return to his own country. He accordingly made arrangements to leave the Duáb in December, 1795, and reached Calcutta, whence he embarked for Europe. He settled down at Chamberi, in his native country, and lived there a long and useful life. Tod, Duff, Francklin, and others of our old writers on Indian history, visited him in his retreat, and there learned, from his own mouth, the particulars of his eventful life which have come down to us.

DeBoigne's description of his brigades is worth transcribing :—" Each consisted of ten battalions of 750 men each, seven of DeBoigne's adminis- tration. which were regulars, known as *talings*, clothed and armed like the troops in the service of the East India Company. The remaining three were Patháns, armed with matchlocks manufactured at Agra. The whole brigade was manœuvred by word of command. To each brigade was attached a force of 500 Mewatis for camp duties, 500 cavalry for patrols, and sixty well-mounted field pieces from 3 to 6 and 9-pounders. A supplementary force of 1,000 Rohillas was subsequently added to lead storming parties." According to his friend and comrade, Smith, De Boigne was a fair Latin scholar, and read and wrote English, French and Italian with ease and fluency. He had a good knowledge of the current literature of the day, and in conversation was polite, affable, pleasant, humorous and vivacious. "He was elegant in his manners, resolute in his determinations, and firm in his measures." To the subtlety of the Italian he added experience gained in every school of life, and proved himself more than an equal match for Eastern politicians. He approached power in disguise, and only showed his real designs

when too strong to be resisted. In the Duáb he was dreaded and idolised, feared and respected, admired and beloved. His name was enough to put down armed resistance; and from the time of his assumption of authority there were no more revolts in the portion of the Duáb under his charge. It is said that Najf Kuli Khán, on his deathbed, gave this parting advice to his courageous wife—"Resist, but if DeBoigne attacks you, yield."

His administration of justice was a fair medium between relaxation and severity, and in the conduct of business he was indefatigable. A writer¹ in the *Telegraph* newspaper, in a letter, dated Agra, January 2, 1797, says of him—"I have seen him (DeBoigne) daily and monthly rise with the sun, survey his *kárhána*, review his troops, enlist recruits, direct the vast movements of three brigades, raise resources, and encourage manufactures for their arms, ammunition and stores, harangue in the darbár, give audience to ambassadors, administer justice, regulate the civil and revenue affairs of a *jáglr* of twenty lakhs of rupees, listen to a multitude of letters from various parts, on various important matters, dictate replies, carry on an intricate system of intrigue in different courts, superintend a private trade of lakhs of rupees, keep his accounts, his private and public correspondence, and direct and move forward a most complex political machine. All this he did without an European assistant, for he is very diffident in placing his confidence, and extremely cautious in bestowing his trust. He used to say that any ambitious person who reposes confidence in another, risks the destruction of his views. Such was his laborious occupation from sunrise until past midnight, and this was not the fortuitous avocation of a day, but the unremitting employment of nine or ten years. To this exhausting and unceasing toil he sacrificed one of the firmest and most robust constitutions which ever nature formed to bless mankind. He left his station with accumulated diseases, extinguished health, and a debilitated frame, but with the poor comparative recompence of uncommon fame, and a splendid fortune of £400,000. In his person he was above six feet high, giant-boned, large-limbed, strong-featured, and with piercing eyes. There was something in his countenance which depicts the hero, and compels us to yield implicit obedience. In his deportment he was commanding, and he trod with the majestic step of conscious greatness. DeBoigne, luminous as he was, had his shades; and great as he appears, had his foibles and little weaknesses;—he was avaricious to a degree verging on contempt, exceedingly tenacious of power, greedy of authority, meanly jealous of merit in those under him, and unworthily envious; but where is perfection? Every officer and soldier when wounded received a certain present, in proportion to his wound, from fifteen days' to three or four months' pay, without any stoppage of pay during the time of his cure. The disabled of his army had a pension for life to the amount of half

¹ Captain L. F. Smith, of the Marhatta service.

their pay, and lands besides ; and the relations of the killed and of those who died of their wounds, got the property of the deceased."

At the departure of DeBoigne there were three brigades,—one at Poona, under the command of M. Perron ; one at Koil, under M. Pedrons ; and one at

M. Perron. Muttra, under Major Sutherland. DeBoigne neither nominated nor recommended a successor, but Perron,

being at Poona, obtained the command for himself. It is said that DeBoigne's parting advice to Sindhia was never to give the control of all these brigades to one person ; and that to his successor was embodied in the clause that he introduced into his own written agreement with Sindhia—"never to fight with the English." Perron came out to India in the *Sardine*, a French frigate, in 1774, as a common sailor. Deserting thence he entered the service of several of the partisan leaders in different parts of India, and in 1789 received a commission from DeBoigne. Perron was a man of great courage, activity and industry. His attention to his duty and his personal bravery at Kanond, in 1792, induced DeBoigne to promote him to a majority ; and in 1793 he was sent in charge of the first brigade to the Dakhin. He returned to Koil as Commander-in-Chief of the Duáb forces in February, 1797.

The revenue of De Boigne's districts in the Duáb had risen under his care from sixteen to over twenty lakhs of rupees a year. Perron's administration. Perron not only received these, but added to them on all sides. He arranged and pursued a systematic plan for the aggrandisement of his possessions and fortune, and in this was so successful, that in a short time the entire country from Lahor to Kota, and from Jaudhpur to Koil, acknowledged his authority. The principal obstacles to his attaining undivided influence in the Marhatta empire were Tantia Pagnavis, Lakhwa Dáda and George Thomas. The first was taken prisoner and died by poison ; Lakhwa Dáda fell in 1801, after the fight at Datiya ; and George Thomas, as we have seen, succumbed to the united battalions of all Perron's contingents, now raised to four brigades, at the close of the same year. Perron's revenues at the beginning of 1802 amounted to more than forty-one lakhs of rupees a year, from sixty-eight parganahs. At the same time a cloud began to gather in the west, and at the risk of the safety of his power, and even of his life, Perron was obliged to visit the Marhatta camp at Ujain, where he arranged matters for the time by a liberal use of money. Sindhia in the meantime was preparing to assist the

Perron retires. Peshwa and attack Holkar, and asked for a second brigade from Perron, who, though he risked the independence, and even the existence of the Marhatta empire, delayed for his own sake for three months to send the reinforcement asked for, and then only despatched his newly-raised fourth brigade. Even this force arrived too late, as the British had already stepped in and restored the Peshwa, who had thrown himself into

their hands. This so alarmed the Marhattas, that, laying aside their mutual jealousies, the Berar Raja, Holkar and Sindhia, united for a time against the English, and resolved to carry out a plan of campaign drawn up by Perron, who advised their active alliance for this purpose. But before anything could be done in pursuance of their agreement, quarrels again broke out. Holkar withdrew himself from the confederacy, and Sindhia, resolving to supersede Perron, bestowed the command of the Duáb on Ambáji. Perron found his fourth brigade, under Dudrene, ready to desert him. Bourquien had induced the second and third brigades to revolt, and had even written to the commanders of the irregular horse at Koil to encompass the death of Perron. Knowing all this, Perron only made a half-hearted resistance at Koil, and fled by Háthras to Muttra, where he surrendered to Lord Lake, and proceeded thence by Calcutta to Europe.

Bourquien, who commanded at Dehli, was put under restraint by his own troops, who met the British on the road between Aligarh and Dehli, where the Marhattas were completely defeated on the 11th September, 1803. The Prince Akbar, who had succeeded to the position of heir-apparent since the death of his eldest brother Jawán Bakht at Benares, in 1788, came out to meet the British Commandor-in-Chief, and conducted him into the city, where he was received by the blind and aged emperor. The treaty with Sindhia, dated Surje Anjangaum, 30th Decembar, 1803, ceded to the British all the forts, territories and rights held by the Marhattas in the Duáb and the countries to the north of the territories of the Rajas of Jaipur and Jandhpur, and the Rana of Gohad.

Though the war with Sindhia was thus brought to a successful termination in 1803, Holkar, in the following year, renewed hostilities; and, having been joined by the Játs of Bhartpur, sent a considerable force to invest Dehli, which was then in possession of a British garrison under the celebrated General Ochterlony. In 1804, Lord Lake collected stores and supplies, and set out by Muttra for Dehli. On his way he drove out Ghulámi Khán, who had been plundering the Aligarh District; and Holkar retired from Muttra at the approach of the British force. Holkar's light troops accompanied the army, and hovered on the flanks all day, cutting off stragglers, whilst at night they always encamped, out of reach.

Near Dehli, Holkar branched off and crossed into the Duáb near Bágpát; thence he proceeded northwards by Sardhana and Shámli; but on being pursued by Lord Lake, left the latter place on the 3rd November, and presented himself before Fatehgarh. The civil officers retired into the fort, which, with the old cantonments, were preserved; but the cavalry lines and new cantonments, which lay beyond the ravines, and were therefore beyond the line of defence taken up by the troops, were burned by

Holkar. Here he was surprised by General Lake on the 17th of November, and, in the words of his own historian, "was totally defeated, with great slaughter," and retreated across the Jumna into Bhartpur territory, where he was joined by Amír Khán, the Pindara leader.

On the 7th February, 1805, Amír Khán crossed the Jumna at the Mahában ghát, with a body of horse lightly equipped, intending to create a diversion in the British rear. He plundered Gokal and relieved Kamona in the Aligarh District, then held by Dúndi Khan. Thence he passed up the Duáb by Púth in the Meerut District, and crossing the Ganges at Kumr-ud-dinnagar, caused some disturbance in Rohilkhand. Driven thence by General Smith and Skinner's horse, he re-entered the Duáb at the same point, and rejoined Holkar's force before Bhartpur on the 21st March, 1805, after an absence of six weeks. General Smith followed two days afterwards. The peace of this tract was never again seriously disturbed until the outbreak of the mutiny in 1857.

The mutiny narratives of the Meerut Division abound with instances of firm devotion and unflinching bravery. As they are given in some detail under each district, it will be necessary here to make only some few general remarks on the mutiny in this division as a whole, and this cannot be better done than by giving Mr. Fleetwood Williams' summary of the origin and progress of the rebellion in the Meerut Division.¹ He writes—"That the rebellion had been planned by the Musalmáns, I have no doubt. It is not the province of a local officer to trace this, but one or two indications may be mentioned. Though there was no apparent sympathy, the idea of the restoration of the Musalmán religion to power has been repeatedly kept alive. Invitations to join in a war against infidels, emanating from the Swát country, have circulated through the upper part of Hindústán. The anxiety of the Rohilkhand Patháns, particularly the members of the family of Háfiz Rahmat Khán, that Government should not suffer anarchy and oppression to continue in Oudh, but should interfere and introduce the just administration with which they were blessed, seemed at the time to be the loyal desires of enlightened men. Late events show that they anticipated the long-hoped-for opportunity which the cry of annexation and the decreased importance of the native soldiers in Oudh, under British rule, afforded. The march of the mutineers from Meerut to the arrival at Delhi might be the policy of soldiers, but the re-exaltation of the Múghal king, and the immediate submission of the Hindu sepoys to the head of the Musalmáns, had a deeper source. The recorded conversation, in March, 1857, of the Bijnaur Nawáb and his friends—'Is there any security now for Islám?' and that 'Islám was form-

¹ Narrative of Events, 406 of 1858, dated November 15, 1858, paras. 425, *et seq.*, by F. Williams, C.S.I., of the Civil Service, Commissioner of Meerut.

erly the dominant religion,' is a specimen of the movement among the Muhammadans. An earlier conversation than this could be traced, I believe, between one of the family of Háfiz Rahmat Khán and a Rajpút in Rohilkhand, in or about December, 1856, when the Pathán recommended the Thákur to look to his weapons, as he would be wanting them soon.

"The tone of the Muhammadan portion of the native press, and the readiness with which, not the impoverished and discontented only, but the well-to-do Muhammadans in every rank and station staked their all upon the issue, and, with few exceptions, joined in rebellion; their extraordinary association with 'idolators' to exterminate 'the children of the book,' in opposition to the laws of their prophets, and the *fatwa*hs of the few Maulvis who dared to speak out; even the exceptional loyalty of that portion of the Muhammadans whose views on the matter of proselytism differ from those of the majority; the happily unavailing endeavours of the Muhammadan leaders to make the mass of the population join them; and the bitter complaints of the Hindu mutineers, that they had been deeply deceived; all these indicate that, though a spirit of mutiny may have prepared the native army, the real movers were Muhammadans. Even at Meerut the first move was made by Muhammadans. A

Outbreak at Meerut.

Hindu said he had fired off the new cartridges, and that all would have to do it. But two Muhammadans spread the story about cow's and pig's fat being used in greasing the cartridges, saying that all would be polluted; that it did not so much matter for the Muhammadans, since they could remove the pollution, but the Hindús would irrecoverably lose caste; and at the instigation of these Muhammadans, the troopers of both sects bound themselves by an oath not to use them. There is no doubt that all the native soldiers retired from the parade when their comrades were disgraced, muttering 'mutiny.' The rumours that the Europeans were coming to seize the magazine, which issued from the Suddur Bazar, and on which the sepoy's rushed to arms, may have been an accident or mistake. But that there were secret agents, and those Muhammadans, watching, if not guiding events, it seems impossible in this part of the country to doubt.

"The mutiny was apparently unpremeditated, yet the Suddur Bazar people

General disloyalty of the
Musalmáns.

were ready before a shot was fired in Cantonments. The outbreak immediately assumed a Muhammadan character; a holy war against the infidels (the Europeans and Christians) was proclaimed; and eventually, in the Upper Duáb and in Rohilkhand, the mass of the Muhammadan population rose against Government. I believe that in Rohilkhand the Nawáb of Rámpur, and a few of his own trusted friends, and the Nawáb's own trusted personal attendants; in Bijnaur, the Deputy Collector and Sadr Amin; Wiláyat Husain Khán in Moradabad; the family of Hakím

Khán and Bashír Khán in Pilibhít; Muhammad Nur Khán in Sháhjahánpur, and a few Government officials, were the only Musalmáns who from the first stood out for Government.

In Saháranpur it was remarked that the extensive risings were attributed entirely to the influential Muhammadans. In Muzaffarnagar is a class of Sayyids who do not go the lengths Muhammadans generally do in matters of proselytism by the sword. These Sayyids even were warned, but their loyalty was happily fixed by remonstrances conveyed to them by some of their headmen; and though in this district the Muhammadans were late in rising against Government, eventually a vast multitude gathered under the 'green flag,' and displayed the bitterest animosity,—massacring in their mosque men of their own religion, after the most solemn promises of safety, because they were faithful to their rulers. In Meerut, though there were some good exceptions, Muhammadans were generally ill-disposed, and most joined in the rebellion. In the whole district of Bulandshahr, I can only bring to mind one exception, that of the family¹ of Murád Ali Khán, of Chatári and Paháru, who took the side they had taken in Lord Lake's time,—that of the British Government. Everywhere in this part of the North-Western Provinces, as a general rule, the antagonism of the Musalmáns showed itself in every place, from the open rebellion of multitudes, to the scowling impertinence of individuals; from the public proclamations of rebel leaders, to the muttered imprecations of bigots in the mosques. The very fact that the few who shone out as loyal subjects or merciful men were stigmatized as Christians, infidels, apostates from the true faith, should show what the belief and feeling of the Indian Musalmán is. There was a marked difference between the conduct of Muhammadans and other rebels in this part of India. The first warred against Government and Europeans, the others plundered. The first, from the beginning and throughout, abstained from injuring the inhabitants of the country, assured them in order to win them to Muhammadan rule, and urged them to join against Government. The plundering tribes, almost the only Hindús who in these parts decidedly and thoroughly misbehaved, turned their hands against every one that had property,—their enemies and creditors first. The Mawai Játs of the Baraut parganah, in the Meerut District, were almost the only Hindús who showed unmitigated disloyalty, and they were urged to it by a notorious bad character, Sáh Mal. The Gújars even were in some instances against us, and sometimes took the side of Government. Vast numbers even of these plundering tribes, who bear Hindu names—Gújars, Rajpúts, Tagas, &c.—are Muhammadans, forced proselytes when the power was paramount in Dehli, and, like all such proselytes, intensely bigoted. It was not a national movement against Government.

¹ Converted Hindús of the Badgújar clan.

“ With the exception of the immediate neighbourhood of Meerut, it was generally sometime before Government offices and Government property were attacked. In Saháranpur, the towns of Deoband and Nakúr were plundered, and of course the Government offices in them were not exempted. A mob collected to attack the treasury at Saháranpur, but was easily dispersed. These were the only instances in which extensive plundering assumed the type of rebellion. Muzaffarnagar must be treated as an exception. The best disposed populace in this world have been tempted to let loose the innate wickedness of human nature by disappearance of all authority. In Meerut the widely-spread report that all the Europeans had been destroyed (which was not contradicted, as it should have been by their appearance in every direction); the uninterrupted passage of the Bareilly mutineer brigade; the total surrender of the Bulandshahr District to Walidád Khán, who should have been seized by a small force, and hung within three days of his breaking out into open rebellion; the propinquity of Dehli, and the constant hope of assistance from the mutineer force there; by which concatenation of circumstances every bad character in the district was encouraged to evil, induced a tendency to rebellion, which was favoured by the retention in the lines of the troops who ought to have been enforcing order and checking insurrection. But even in this and in the Bulandshahr District, till, in the latter, the refusal of aid from Meerut, the approach of mutineers from below, and the hope of rescuing the prisoners that the district officers had made, incited the people to it, the outbreak was characterized by aggressions of the lawless part of the population on the better conditioned,—the prevalence of crime, in consequence of a conviction that authority had ceased, rather than by rebellion against the State. The last offence, as a general rule, spread among the people slowly, as delay at Dehli brought conviction that the British power was passing away, and even then only broke out here and there, when notorious bad characters, flushed by success in plundering, led their followers to greater enterprizes.

“ The normal state of the ordinary mass of the people, *i. e.*, those not either Muhammadans or thieves, was waiting events; and their conduct depended on the amount of their good sense or their credulity. There were some who from the first felt that, though the few Englishmen in India might be crushed for the time, an overwhelming British force would come out to reconquer the country and take vengeance on the traitors. These were the few. There were some who believed the false or exaggerated rumours circulated by the rebels, and hastened to separate from the foreigners, and secure favour from the native rulers. These were more in numbers than the first class considerably; but still the many wavered between the two extremes. But all feared,—all were employed in an anxious

endeavour to ascertain what would be their own individual interest; the unfailing consideration of the natives of Hindústán. This their sole consideration, and cowardice, both moral and physical, made mutineers of half the native army, and a percentage of the population, (the said percentage fluctuating according to circumstances, but never very large,) rebels. Had there been European soldiers and non-commissioned and commissioned officers to the extent of ten per cent. in each native regiment, a nucleus for good men to fall back upon, with a firm front to face the fire of mutineers, half the men of the mutinous regiments would not have gone, and half the regiments in the service would have stood staunch to their duty; but bodily fear and mental weakness, the absence of all principles of the all-controlling sense of duty, and a dastardly dread of being killed, made well-intentioned men follow the majority of their comrades, and peaceable subjects seek safety in disaffection. Those who have lived in the midst of it, and who should be the best judges, cannot but feel that the theory that it was a purely military revolt; and the other, it was a national effort to shake off tyrants, are equally far from the truth. Had not the mass of the people awaited the issue, had any large proportion of them joined, what would have become of the small but gallant bands that in different parts of the country stood out against their active enemies, may be concluded from

	<i>Population.</i>	<i>Troops.</i>
Saháranpur ...	801,325	800
Muzaffarnagar ...	672,661	500
Meerut ...	1,135,072	1,500

Bulandshahr was abandoned, but when the Málágarh rebel was ousted, was held by less than 500, the population being 778,342.

the marginal table, showing in round numbers the population of the districts of this division, and the strength of the troops which maintained Government authority. Neither can people on the spot be persuaded to believe that efforts to Christianize the natives led to rebellion. Had this been the case, how is it that Benares, the largest city in India, to Hindús the holiest, and where Muhammadan bigotry is sharpened by its peculiar position, the place where missionaries have worked more extensively than in any part of India, where the Bible is openly studied and read by hundreds of students in many schools, did not send some of its 180,000 to save the mutineer brigade from the 200 British soldiers.

“ Beyond all doubt the secret movers of the revolt disseminated widely the wildest and most false reports that Government was going forcibly to convert the people; and during the outbreak these rumours

Causes of the mutiny. were spread abroad to such an extent, that many ignorant men believed them, and, when peace was restored, some have stated their readiness to become Christians, and were astonished when told that no man could make another a Christian. But here, round Meerut, where the mutiny commenced, missionaries have been more successful in one year than they had ever been; and I have been told by a native deserving of all confidence, that in Bareilly, Muhammadans and Hindús agreed that to be all of one, and that the

Christian religion, would be better than to be exposed to the tyranny of Khán Bahádúr Khán, and his following of miscreants. It is difficult to believe that the efforts of Government to give education to the people can have caused the mutiny and rebellion, when in some districts, the only public institutions maintained during the anarchy, where doctors were driven out, and dispensaries were destroyed, were village schools; the only public buildings saved were village school-rooms; and the people, when asked to account for this, stated their intentions to have maintained their schools, even if the rule of India had changed hands. During the outbreak, as far as experience goes, the most loyal, the most trustworthy, were young men who had received an advanced English education in the Government institutions. I have known such, of the writer class, not a fighting race generally, become brave, soldierly men; I have seen English letters from such men, the matter and composition of which would have done credit to any Englishman, written from the midst of fanatic rebels, conveying full and useful information, openly and boldly given, though the writer stated he knew he was suspected and watched, and immediate death would be the certain result of discovery. The only approach to the sense of duty which has animated Anglo-Saxons through this struggle was to be found among such educated men." I have nothing to add to this account, and the district narratives will speak for themselves.

The medical history of the division shows a steady increase in sickness of late years, much of which has been traced to preventible causes, such as bad drainage, bad sanitation, and inattention to the most ordinary precautions for the preservation of health. Taking the three principal diseases—cholera, small-pox and fever, the following facts may be gathered from the reports¹ in regard to the frequency and virulence of their attacks. Cholera broke out in 1867 amongst the pilgrims returning from the Hardwar fair, and, strange to say, seems to have very generally restricted itself to those who had been at the fair, and not to have shown itself out of the line of march of the pilgrims. Though deaths from cholera occur at all times of the year in almost every district, yet cholera seldom becomes epidemic in the Upper Duáb. During the epidemic of 1869, the deaths hardly reached more than 0·2 per thousand, whilst in Allahabad and the Benares Divisions, they rose from 2·1 per thousand in Allahabad, up to 10·9 per thousand in Lalitpur. During this year cholera was absent in the hill districts altogether, and little prevalent in those lying immediately under the hills, increasing in intensity to the south. The actual number of deaths attributed to cholera during 1869, in the five districts noticed in the present volume, was 1497; in 1870 and in 1871 the numbers were 1111 and 1111 respectively.

¹ Dr. Catcliffe's report on the sanitation of the Meerut Division, II; Sol. Rec. Government, North-Western Provinces, 13; Dr. Planck on the same, Reports for 1869—72.

District.	Population in 1872.	DEATHS IN 1871 from			1873 from			RATIO OF DEATHS PER 1,000 OF THE POPULATION IN					
		Small-pox.	Fever.	All other causes.	Small-pox.	Fever.	All other causes.	1870.		1871.		1872.	
								Fever.	All other causes.	Fever.	All other causes.	Fever.	All other causes.
Sahāranpur ...	850,663	4,111	21,184	4,261	5,296	14,839	6,080	22.97	10.54	34.44	16.05	10.84	12.82
Muzaffarnagar ...	704,000	4,332	15,507	2,523	1,007	13,791	1,906	24.70	11.75	22.73	10.05	10.59	4.36
Meerut ...	1,271,451	1,307	28,523	4,773	826	38,208	6,171	16.89	5.52	23.86	5.21	30.04	5.51
Bulandshahr ...	830,733	444	15,944	4,618	1,048	23,308	5,902	14.32	6.59	19.81	6.88	24.77	7.42
Aligarh ...	1,037,930	701	12,954	3,053	593	15,307	5,127	8.29	4.81	13.99	4.74	14.47	5.40
Total ...	4,850,789	11,225	94,412	19,858	8,860	1,05,357	25,240	...	...	...	...	...	...

These figures show conclusively the extent and gravity of the epidemic.

Dr. Kirton, of Muzaffarnagar, pronounces the fever prevalent in the Upper

Character of the fever. Duāb to be "a true malarious fever of intermittent

type,—such a fever, indeed, as is generally attributed to effluvia arising from alluvial soil saturated by moisture. The attacks were characterised by distinct paroxysms, consisting of a cold and hot stage, followed by periods of intermission. The paroxysms mostly occurred daily, but frequently every other day." Dr. J. P. Walker, writing of Rūrki in 1867, calls it "intermittent fever." Dr. Drysdale, of Her Majesty's 79th Highlanders, describes the fever that prevailed in his regiment at Rūrki as "intermittent fever in a spurious form." Dr. Metcalfe, of Sahāranpur, says of the fever that it was "undoubtedly malarious in its character, subject to relapses, but not often when quinine had been given sufficiently early and in sufficiently large doses." The fever, as a rule, commences in July-August, and ends about December. In many cases the protracted fever brought on diarrhœa, which accompanied nearly all the fatal cases, and might possibly lead to the supposition that typhoid fever either co-existed with malarious fever in some of the towns, or that the prevailing fever was a hybrid variety between malarious and typhoid fever. Dr. Cutcliffe,¹ however, thought that all his inquiries pointed "to a common local cause of origin of the disease, and led strongly to the belief that the cases which occurred were varieties of one and the same endemic disease,—malarious fever." Dr. Planck, in 1869-72, gives it the same character.

Besides the deaths due to fever and the utter prostration occasioned by continuous attacks of the disease, one of its most remarkable effects is the causing of impotency. Dr. Cutcliffe first pointed this out in 1867, and expressed his opinion "that impotency is extraordinarily frequent in the most malarious tracts."

Impotency and spleen as
sequelæ.

¹ See his observations on the true character of malaria and effluvia in Sel. Rec. Gov., N.-W. P. II., N. S. 65.

and, again, "of this fact I convinced myself, by the frequent applications that were made to me, that the men inhabiting the very malarious tracts which I have described are suffering from impotency, to an extent which I have never known or heard of elsewhere." Dr. Planck's attention was specially drawn to the same subject, and he writes—"Concerning the general prevalence of impotency, I am of opinion that that condition is more than usually common in some places of the Sahāraṇpur District, as a result of the general debility arising from repeated fever attacks; but I do not think it is a condition so common as to threaten to lead to a depopulation of the country. I think this condition exists principally in those who are about to succumb to fever disease, and whose spleens are much enlarged; but I do not think that, as a rule, it affects men in the prime of life for many years before they die." Still, in 51 villages examined by him in the Sahāraṇpur District alone, he found in four villages that enlargement of the spleen was very common; that in four villages it was rather common; in fifteen villages it was common; and in the remaining villages, thirty-one cases were seen, and this too by an observer marching continuously throughout, and unable to examine others than those voluntarily brought to him, and who happened to be present when he visited their villages. These include both irrigated and unirrigated villages. In eighteen irrigated villages in the Muzaffarnagar District he found enlargement of the spleen—very common, in four villages; common, in the same number; uncommon in six; and non-existent in two, in one of which the site was raised and sandy, and in the other the site was low, but here the spring-level was 24 feet from the surface. It is very strange to see that in places where the site was clean there was more mortality than where it was very filthy; but I frequently notice this remark added—"much stagnant water near." In fifteen unirrigated villages in the same district the returns show—in two cases, no spleen enlargement; in one case it was very uncommon; in nine cases, uncommon; and in only three cases common; and these three lie within the Nāgal *khādir*, with a spring-level varying from only six to eight feet from the surface. It has been a painful task to go through the records of these fever-stricken villages, and read the constant remarks "many persons afflicted with spleen, especially children; coughs and ophthalmia common; a general complaint of sickness was heard here"—"people very unhealthy looking"—"fourteen houses, only two children left, used to have many, now dead"—"paralysis, a result of fever, much complained of, and some cases of it seen"—"one-half the people down with fever in the rains"—"an earnest cry for remedies"—"people in low spirits and despondent." Enough has been said to show that this fever is a serious matter, which, though it carries off only three in every hundred every year, yet so wastes the energies of the survivors, as to render them unable to carry on their work of life as cultivators of the ground. The sub-division of the soil yields little enough to the labour of the

man who can work his full tide, but if to this be added the utter prostration of the bread-winner of the family, it needs no words of mine to paint the distress which must ensue in thousands of families amongst the inhabitants of the northern districts of the Upper Duáb.

The fever being of a malarious type is undoubtedly due to the miasma evolved from over-saturation of the soil. In proportion to the intensity of the miasma we have the disease "in the formidable remittent type, and from the slight ague and fever, which scarcely shakes a strong man, to the pukka jungle fever which, if it should not kill outright, will necessitate a prolonged change of climate for the recovery of a body impaired for the remainder of its existence." To the north of the Saháranpur District fever prevailed to a much greater extent in former times, especially about Kheri and Sakrauda, and along the line to Mohand. The improvement here is undoubtedly due to the clearing of jungle and the extension of cultivation. Lower south the disease may be traced along those places where the drainage lines are naturally slow, or have been impeded by artificial obstructions, such as the canal lines and the railway embankments. The towns and villages along the Ganges Canal, from Manglaur southwards, suffered very much, but many of these, such as Manglaur, Libarheri, Púr, Bhainswál and Jauli, are so filthy, that it is no wonder that they have been frequently attacked by fevers. Dr. Outcliffe describes them as "reeking with human excrement and filth of every description." Rúrki, too, was unhealthy in 1867, and so also were the tracts along the Kalandar Nadi, Kátha Nadi, Khála, Síla, and Krishni Nadís, all slow streams, running through swampy, ill-drained depressions. The same may be said of parts of the West Kali Nadi, the old bed of the Jumna, the Eastern Jumna Canal, and in the vicinity of these streams and the *khádir* of the Ganges. All these places, covered with swamp and stagnant water, are prolific sources of malaria, which they must disengage in large quantities. Drainage, and the enforcement of a greater economy in the use of canal water, could to a great extent prevent the evolution of malaria in these tracts. For the *khádir* of the Ganges and Jumna rivers it has been proposed to plant a belt of trees along the high bank separating them from the uplands, in order to intercept the malaria borne from them by the easterly and westerly winds,—a plan which experience elsewhere has shown to be valuable and feasible. These means, with the supply of the only reliable antidote, quinine, and more attention to conservancy, are the principal remedial measures recommended by Dr. Outcliffe. The canals form so important a feature in the hydrography of the Duáb, that their influence on the public health demands a separate and more detailed notice.

In 1845 a committee was appointed to report upon the sanitary effects of the canal. The sittings were interrupted by the Sikh war, but were renewed in 1846, and their report was sub-

Influence of the canals on the public health.

mitted to the Governor-General at Rurki in March, 1847. In writing on this subject, Major P. T. Cantley remarks:—"In referring to the low tracts of the Duáb, and especially to those situated in the Fatehpur District, my attention has been drawn, during the last two years especially, to an opinion which has been prevalent, that wherever lines of canal exist in these provinces the germs of malaria and sickness hold undisputed authority. Without producing proofs, that are numerous, that the epidemics which have shown themselves in towns and villages near the canals have been equally felt at others far removed from the influence of either canals or of irrigation, it is natural to infer that the introduction of moisture and excess of vegetation on the surface of countries which had been comparatively dry before, must necessarily lead to a change of climate. That change must necessarily demand an alteration in the habits of the people subjected to its influence." This alteration has not taken place,—the same light clothing is worn, the same habit of sleeping on the ground and working in the night air is continued, and to this Major Cantley attributed much of the illness. In 1843, Rámpur, Saháranpur and Shánli were afflicted with malarious fevers, whilst the notoriously unhealthy junglo tracts to the north were left untouched. Similarly, sickness supposed to be due to the presence of canals was found to be prevalent in places where there were no canals and no irrigation.¹ A report from the Meerut District, in calling for medical aid for the population on the canal banks, shows the feeling of the district officers. At that time the only canal in the district was the Eastern Jumna Canal, which irrigated a small strip of land between the Karsuni and the Jumna. In 1843 there was sickness in this tract as well as all over the district. It was as rife at Bogamabad, 23 miles east of the canal, as in pargana Loni on its banks. Murádnagar, and other large towns which had no connection with the canal, suffered in a precisely similar way, yet aid was only asked for the canal tract, based on the foregone conclusion of a connection between the sickness and the canals.

The results arrived at by the Sanitary Committee of 1843 show that there was an epidemic in 1843, which was generally, though not universally, more severely felt in the canal tracts than elsewhere. In places totally unconnected with the canal, fevers prevailed to an extent and with an intensity as great as in the worst canal villages. Much of the evils complained of were due to bad drainage, the natural drainage being checked and impeded, and the soils being stiff and retentive of moisture. The Committee recommended the stoppage of irrigation within five miles of large towns, and that certain sanitary arrangements should be carried out in the villages, as, on the whole, the influence of irrigation was very local. They found that the Eastern Jumna Canal furnished some of the best and worst results of canal irrigation!—sick-

¹ Ganges Canal, I., 57.

ness where the drainage had been obstructed and where the soil was clayey, as in the centre division; health where the drainage was perfect and the soil light, as in the northern and southern divisions. Or, in other words, the Committee of 1843 found that the salubrity or otherwise of the canal depended on the nature of the soil and the efficiency of the surface drainage. The Committee summed up their recommendations as follows:—1. That the canal should be kept, as far as possible, to the ordinary level of the country; 2, that earth, when required for embankments, should never be obtained from excavations made outside the canal without proper precautions being taken for drainage; 3, that the canal should be taken along the watershed, so as to interfere as little as possible with natural drainage lines, which, when intercepted, should be relieved; 4, masonry drains should be constructed under distributary channels and bridge ramps, where these cross natural lines of drainage; 5, no private water-courses should be allowed; 6, irrigation should be prohibited within five miles of large towns; 7, grass and weeds should not be allowed to lie and rot, but should be burned; and 8, irrigation should be altogether prohibited in localities which appear naturally to possess a malarious character.

Dr. Cutcliffe pursued the same line of inquiry in his researches into the causes of the epidemic of 1867. He found that the water-level all round had been greatly raised by the introduction of canal-irrigation, and that this had been effected as well by the increase to the natural water-resources caused by the volume of water thrown over the country by the canal, as by the supercession of wells in irrigation, which carried up the water from the sub-soil and distributed it over the surface of the ground, where much was lost by evaporation. In addition, this raising of the spring-level had made the water in many of the wells unfit for use, as well by the liquefaction of the salts that lie in such abundance at no great distance from the surface of the ground, as by coming sooner in contact with the animal and vegetable impurities which an absence of any attempt at sanitation allows to accumulate within the site of every village, and often close to the wells used for drinking water. At the same time that sickness was general along the Ganges Canal from Manglaur to Meerut, and along the Jumna Canal as far as Baraut, it was noticed again that the attacks were more frequent and virulent in the neighbourhood of swamps; and where these occurred at a distance from the canals the sickness was equally felt. In villages, whether close to the canal, or even in the beds of streams where there was proper and efficient natural or artificial drainage, fever was unknown. In Meerut, Sardhana alone showed any unusual sickness, and in Bulandshahr, the town of Galautli suffered severely. In the latter place the sickness was correctly attributed to the undue collection of stagnant water around the village site, and with proper drainage arrangements the fever disappeared.

Dr. Planck in 1869-70 travelled over the greater portion of the Muzaffarnagar

District, and in 1871 examined the Sahāranpur District ; the results of his investigations are the same as

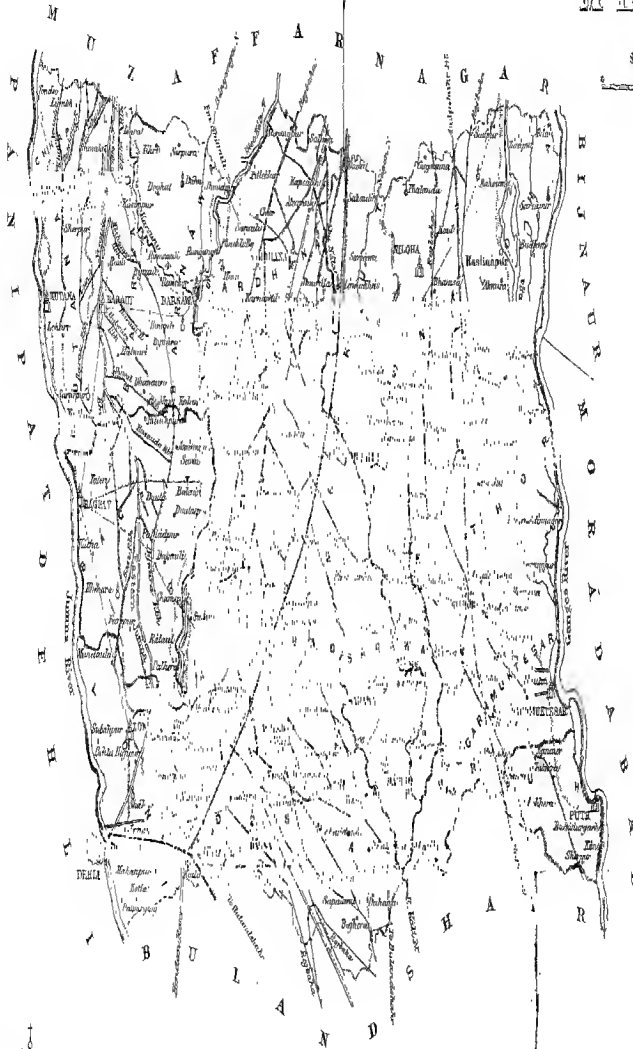
those already arrived at by his predecessors ;—excessive irrigation raising the spring-level in canal-irrigated tracts, and no means taken to improve existing lines of drainage ; or, where the natural lines were impeded by the canal works, no new ones were formed, hence excessive moisture, the destruction of the wells, and the defilement of the drinking water. In tracts removed from the direct influence of the canal, the same cause—bad drainage—was at work. It would be unduly lengthening this notice to recapitulate the details given by Dr. Planck. He corroborates the opinion of the Committee of 1845, that the epidemics which now annually desolate the Upper Duāb are due to insufficient drainage, enhanced in canal-irrigated tracts by the action of the canal in raising the spring-level, and yet to the present time very little has been done to remedy this evil ; and, as I have shown, of late years it has been increasing in a ratio which bids fair to assume gigantic proportions. Whilst money is being liberally expended to meet the possible chances of a famine in Bengal, men are dying in thousands from a disease which is preventible by the exercise of more careful supervision in the expenditure of canal-water, and the construction of drainage lines to carry off excessive moisture.

One result certainly followed upon the reports of the Sanitary Commissioners, and this was the assembling of a conference of canal officers at Meerut in November, 1870, when it was resolved “that a survey of the districts concerned should be undertaken by the Engineers of the Department, working in conjunction with the civil authorities, for the express purpose of determining how the natural drainage channels of the country could be made more efficient. That wherever, in the districts concerned, the spring-level of the sub-soil water was at any time of the year less than ten or twelve feet from the surface, there canal-irrigation should cease or be checked.” The survey was carried out during the cold-weather, but the same facts of the existence of fever far away from canal-irrigated tracts led the canal officers to doubt whether the fever had anything to do with canal irrigation. Dr. Planck again visited the Muzaffarnagar District, and found, as before, that the fever prevails in tracts unirrigated by the canal as well as in canal-irrigated tracts. He writes—“*Second.*—This fact appeared, that the form of fever with which we have to deal is more persistent in its prevalence, more virulent, and therefore more fatal in its results, in the canal-irrigated country than in the country not irrigated by the canal, unless the latter should be naturally a very moist country. *Third.*—This fact appears, that filthiness is common to all the villages, and cannot, therefore, be the cause of the prevalence of ague ; otherwise it should prevail equally in all the places inspected, and the people

should all have the same unhealthy aspect. *Fourth.*—This fact appears, that the most unhealthy people of all are those who live in places naturally moist, the moisture of which has been increased by canal-irrigation,—in low land irrigated from the Jumna Canal, and in the Nágal *khádir*. Considering these facts, one may justly arrive at the opinion that ague has not been introduced as a new thing into the canal-irrigated country, but that its area and period of prevalence, and its intensity of attack, have very greatly increased since irrigation from the canals was introduced;—this prevalence and intensity being very fairly measurable by the increased moisture of the soil, and consequently of the atmosphere, denoted by the height of permanent rise in the spring-level at any given place,—a rise which no man can doubt must be due to canal-irrigation.” Having ascertained by repeated inquiries the connection between bad drainage, whether directly connected with canals or not, and malaria, the canal officers and the district authorities have, at last, prepared large schemes for the improvement of the drainage of the Upper Duáb. Amongst these may be mentioned the drainage of the town of Saháranpur, the improvement of the drainage of the Pándhoi and Dumaula rivers, the deepening and straightening of the cut on the Síla Khúla, and the removal of the impediments to the drainage passing down by the Krishni and Kátha nadís. The Chief Engineer informs me that, altogether, the sum of one lakh of rupees a year has been set aside to improve drainage lines of the canal-irrigated tracts. Several of these projects have been taken in hand, and have already had a marked effect in improving the health of the people; but much remains to be done; and before the Irrigation Department can really take credit for the saving of lives in seasons of drought, this annual waste of life from bad drainage must be met and remedied.

District of MEERUT

Scale 8 Sq. Miles = 1 Inch.



REFERENCES.

- Capital Towns. G.T. Stations
- Villages Roads Metalled
- Police Stations Unmetalled
- Post Offices Villages
- Unmetalled Pathways

MEERUT (MIRATH) DISTRICT.

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MEERUT¹ (Mirath), a district which gives its name to the Meerut Division, is situated in the tract of country known as the upper Duab. It is bounded on the north by the district of Muzaffarnagar; on the east by the Ganges, separating it from the districts of Bijnaur and Moradabad; on the south by the Bulandshahr district; and on the west by the Jumna, which separates it from the Panjáb Province.

¹ The conventional mode of spelling is retained. I am indebted to Mr. S. H. James, C.S., for valuable notes from which much of the agricultural portion of this district notice has been compiled.

The Meerut district lies between north latitude $28^{\circ}-28'-15''$ to $29^{\circ}-18'$, and east longitude $77^{\circ}-10'-30''$ to $78^{\circ}-14'$, and contained, according to the survey papers at time of settlement (1866—1868), an area of 1,505,824 acres, or 2,352·85 square miles, increased by alluvion to 2,353·54 square miles in 1872. The population in 1865 was 1,199,593, or 508 persons to the square mile: in 1872 there were 1,273,914 inhabitants, or 541 to the square mile, and of these 991,226 were Hindús, 281,857 were Musalmáns, and the remainder were Christian or foreign Asiatics. Besides these there were 2,149 Europeans and 142 Eurasians in the district. The whole boundary line of the district is about 230 miles; its greatest length is 58 miles, the least length is 49 miles: the greatest breadth is 48 miles, and the least breadth is 36 miles. On the west the Jumna river forms a natural boundary, and the Ganges on the east. On the south there is no natural boundary, nor on the north, except for some nine miles, where the Hindan, joined in its course by the West Káli Nadi; flows in a south-westerly direction.

The following table gives the revenue, civil, and police jurisdictions, with Administrative revenue, area, and population of each subdivision:—

Present Talisli.	Parganah.	Included in the Ain-i-Akbari in	Number of inhabited vil- lages.	Includes		Census areal in square miles and acres in 1872.	Population in 1872.	In the police ju- risdiction of sta- tion.
				Land-revenue with cesses in 1872 (cen- sus).	Sq. m. Ac.			
I.—Meerut, ...	1. Meerut, ...	Mirath, ...	284	4,54,951	306	290	274,900	Meerut (3), Jāni, Daurāla, Mau.
II.—Hāpur, ...	2. Hāpur, ...	Hāpur, ...	133	1,48,776	162	411	96,776	Hāpur.
	3. Sarāwa, ...	Sarāwa, ...	50	67,201	70	220	37,255	Kharkoda.
	4. Garhmuktesar, ...	Garhmuktesar, ...	80	65,239	105	123	46,013	Garhmuktesar, Baksār.
III.—Gházilabad, ...	5. Púth, ...	Púth, ...	45	44,133	64	341	24,190	Púth.
	6. Gházilabad, ...	Dāsnā, ...	104	1,33,334	137	167	81,333	Dāsnā, Pílkhuā, Dhaulāna.
	7. Jalālabad, ...	Jalālabad, ...	134	1,92,631	201	123	105,559	Dogamabad, Mī- rādnagar.
	8. Loni, ...	Loni, ...	118	1,01,931	156	602	66,145	Shāhdara, Loni, Gházilabad.
IV.—Bāgpāt, ...	9. Bāgpāt, ...	Bāgpāt, ...	120	2,31,189	194	55	108,168	Bāgpāt, Khokara, Buloni.
	10. Baraut, ...	Jalāpur, Baraut, ...	52	1,26,948	78	239	56,240	Baraut.
	11. Kutāna, ...	Kutāna, ...	45	1,09,376	72	129	45,561	Kutāna.
	12. Chhaprauli, ...	Chhaprauli, ...	20	98,789	58	335	37,975	Chhaprauli, Sardhana.
V.—Sardhana, ...	13. Sardhana, ...	Sardhana, ...	64	1,68,560	137	251	82,401	Daba, Baloni.
VI.—Mawāna, ...	14. Barnāwa, ...	Barnāwa, ...	64	1,41,951	113	134	84,697	Kaurad (Munagar, Parichhatgarhi, Kithor.
	15. Kithor, ...	Sarāwa, ...	122	1,30,423	189	432	70,162	
	16. Hastināpur, ...	Hastināpur, ...	138	1,02,475	241	346	75,344	Mawāna, Sarzapur, Bahādūn.
		District Total, ...	1,573	24,00,020	2,353	347	1,273,914	

¹The census of 1865 returns the total area at 2,361·98 square miles, that of 1863 gives 200·09 square miles, and that of 1848 gives 2,332 square miles.

There have been such numerous changes in the Meerut district since its formation that there is much difficulty in tracing out the boundaries of the district in different years, and though tradition ascribes an attempt at settled government in the upper Duáb to the Pándavas many centuries before the Christian era, but very little is known concerning the early local history of the district until the reign of Akbar. According to the revenue records of that monarch the parganahs at present found in the Meerut district belonged to the súbah of Delhi and, excepting the present Sardhana parganah, to the sirkár of Delhi. The parganah of Sardhana was in the sirkár of Saháranpur and constituted with what now forms a considerable part of the Muzaffarnagar district a *dastúr* or subdivision of itself. Meerut city was the centre of another *dastúr* containing parganahs Kithor, Hastinápur, Saráwa, Hápur, Garhmuktesar, Meerut, Jalálabad, and Barnáwa. The present parganahs of Loni, Dásna, Bágpát, Baraut, Kutána, and Chhaprauli formed portions of *dastúr* Delhi. Púth formed a part of the Baran *dastúr* in the Bulandshahr district. Under the Marhattas Meerut formed a portion of the Saháranpur *báoni* or division including 52 parganahs, and was conquered by the British in 1803. A month after the battle of Laswári, on the 4th December, 1803, Sindhia signed the treaty of Surji Anjengaoon, by which he ceded all his possessions between the Jumna and the Ganges to the British. The conquered territory was distributed into three parts and attached to the districts of Etáwa, Moradabad, and Aligarh. Mr. Leycester, Collector of Moradabad, received charge of the upper Duáb, comprising Saháranpur, Muzaffarnagar, and the parganahs in the neighbourhood of Hápur and Meerut, altogether containing 53 maháls, on the 2nd October, 1803, and on the 28th of the same month the three new Collectors met at Koil and fixed the boundaries of their several charges. This arrangement lasted until the following year (September, 1804), when the Duáb territory was detached from Moradabad and formed into a separate zila, known as Saháranpur. In November, 1804, the boundaries were fixed :—"On the east the Ganges, on the west the Jumna, on the north the hills of Srinagar, and on the south the Aligarh district." Between 1804 and 1806 parganahs Bágpát, Loni, Dásna, Saráwa, Jalálabad, Chhaprauli, and Dádri (now in Bulandshahr) were placed under the charge of the Resident at Delhi, but were subsequently attached to the southern division of the Saháranpur Collectorate, with a Collector resident at Meerut, while the revenue affairs of the northern division were administered by a Collector resident at Saháranpur.

This arrangement lasted until 1818 A.D. In that year the parganahs forming the southern division of the Saháranpur district, with the Aligarh parganahs of Sikandarabad, Tilbegampur Ara (Ada), Dankaur, Kásna, Baran, Málágarh, Agauta, and Abár-Malakpur, yielding a revenue of Rs. 2,51,682, were joined together to constitute the new

district of Meerut. The new distribution lasted until 1824, when the Aligarh parganahs, with Thána Farída and Dádri, were transferred to the new district of Bulandshahr; and Khátauli, Soron, Lalukheri, Jánsath, Shámli, Baghra, and Jauli were transferred to the new district of Muzaffarnagar.

In 1823 the Meerut tahsils were Meerut, Parichhatgarh, Khátauli, Kándhla, Dásna, Hápur, and Sikandarabad. In 1834 the *jágir* of Bála Báí Sábiba of Gwalíar fell in, and in 1835 the tahsils were seven in number:—Meerut, Hastinápur, Kándhla, Bágpát, Dásna, Hápur, and Púth Sayána. In 1836 the estates of Begam Sumru also lapsed, and parganahs Sardhana, Barnáwa, and Kutána were included in this district. These parganahs formed distinct tahsils until 1840, when Barnáwa was attached to Baraut, and Hastinápur and Tárápur were added to Sardhana. Gangíru, Phugána, Títarwára, Bhúma, and Sambalhera were transferred to Muzaffarnagar soon after the death of Begam Sumru.

At the settlement in 1837-40 mention is made of parganahs Chhaprauli, Rucha, Púth, Sayána, Hastinápur-Niloha, Bhúma, Sambalhera, Tárápur, tappa Gaura, Bágpát, Loni, Barnáwa, Tándá, Dásna, Jalálabad, Meerut, Sardhana, Burhána, Baraut, Kutána, Shikárpur, and Kándhla. Of these parganahs, Shikárpur, Sambalhera, Bhúma, Kándhla, Kairána, and Burhána were transferred to Muzaffarnagar in 1842. Rucha formed a portion of parganah Chhaprauli and is now included in it. Parganah Sayána was transferred to Bulandshahr in 1844. Hastinápur-Niloha, also known as Niloha-Tárápur from its principal towns, is now known as Hastinápur only. Tappa Gaura or Gohra formed a part of Hápur, separated from it by Nain Singh, Gújar, at the close of the last century, and is now included in Hápur. The Tándá portion of Tándá Phugána or Tándá Bhagwán contained twelve villages, absorbed in Chhaprauli in 1834, while Phugána was transferred to Muzaffarnagar, and is now included in parganah Kándhla. Kithor was originally a tappa of Saráwa, separated from it by Jít Singh, Gújar, of Parichhatgarh, in the time of Najib Khán. Tappa Ajrára, separated from Hápur by Fateh Ali Khán, and also known as Saráwa-Ajrára, was incorporated with Saráwa in 1842.

The tahsíl arrangement adopted by Mr. Plowden in 1842, after the transfers to Muzaffarnagar, was as follows:—

Tahsíl.	Parganah.	No. of villages.	Tahsíl.	Parganah.	No. of villages.
Sardhana,	Sardhana,	80	Baraut,	Kutána,	37
"	Hastinápur-Niloha,	127	"	Chhaprauli,	36
"	Tárápur	49	Bágpát,	Bágpát,	157
Baraut,	Baraut,	51	"	Barnáwa,	79
Dásna,	Jalálabad,	112	Dásna,	Dásna,	150
"	Loni,	97	Hápur,	Púth,	46
Hápur,	Hápur,	75	"	Garhmuktesar,	108
"	Ajrára,	12	"	Kithor,	60
"	Saráwa,	50	"	Gohra,	20
			Meerut,	Meerut,	357

In 1853-54 the parganahs were again re-arranged, and the changes that then took place are shown in the following table because of their topographical interest, and as showing the difficulty of attempting any comparison with the statistics previous to the 1st May, 1853, when these changes came into force¹ :—

Changes in the distribution of parganahs effected in 1852.

Parganah.	Increase.	Decrease.	REMARKS..
Meerut, ...	...	45	58 villages transferred to and 13 received from other parganahs.
Sardhana, ...	2	...	5 received from and 3 transferred to Muzaffarnagar.
Barnāwa, ...	...	8	18 received from and 26 transferred to other parganahs.
Jalālabad, ...	39	...	43 received from and 2 transferred to other parganahs and 2 to Delhi.
Dāsna, (Ghāziabad.) ...	...	47	14 transferred to Delhi, 35 to other parganahs, and 2 received.
Baraut, ...	4	...	20 received and 16 transferred to other parganahs.
Bāgpat, ...	...	19	21 transferred to other parganahs and 2 received.
Kutāna, ...	11	...	11 received from other parganahs.
Chhaprauli, ...	...	4	2 transferred to Baraut and 2 to Muzaffarnagar in May, 1853.
Niloha-Tarápur, ...	...	9	1 gained by alluvion, 2 received from Muzaffarnagar and 12 from Meerut, 14 transferred to other parganahs, and 10 to Muzaffarnagar.
Kithor, ...	60	...	61 received and one transferred.
Hāpur Ganra, ...	38	...	52 received and 14 transferred.
Sarāwa-Ajrāra, ...	...	12	10 received and 22 transferred.
Pūth, ...	1	...	1 received from Garhmuktesar.
Garhmuktesar, ...	...	34	34 transferred to other parganahs.
Loni, ...	...	112	2 transferred to other parganahs and 110 to Delhi.
Total, ...	155	290	
Deduct increase, ...	...	155	
Net decrease, ..	...	135	

In May, 1853, the district was arranged amongst the following tahsils :— Meerut, 323 estates ; Sardhana, 154 ; Bāgpat, 277 ; Murādnagar, 266 ; Hāpur, 329 ; Mawāna, 289, or a total of 1,638 estates. The head-quarters of the Murādnagar tahsil were subsequently (1859) transferred to Ghāziabad. In 1859 Loni was restored to Meerut and then included 130 villages, comprising 132 estates, of which 104 were a portion of the 110 given over to Delhi in 1852, and 26 were new villages formerly belonging to the Delhi district, giving an increase of 99,784 acres to the area of the district. The number of inhabited villages in the

¹It would take months of labour to exhume and arrange the statistics of the villages transferred and received in 1853, so as to bring the result in accord with the state of the district in 1865 and 1872, when the regular statistics of the district were compiled, which moreover, from the care taken in their preparation, are the only valuable ones that we possess. See Collector to Commissioner, No. 181, dated October 30, 1841, and G. O. No. 1506, dated April 22, 1853, on both changes.

present fiscal subdivisions are shown in the table given above, and represent the results of the union and partition of estates and the changes caused by alluvion and diluvion as found in 1872. Amongst the old subdivisions which have been allowed to fall into disuse are the following :—Garhmuktesar contained the tappas of Dabāna Bagsār (now called Gangadhar Bazar) and Garhmuktesar; in Hāpur were tappas Gaura or Gohra, Hājipur and Hāpur; and in Sarāwa the tappas of Bhojpur, Kharkoda, Sarāwa and Kithor (now in the Mawāna tahsíl). These mahāls were in the *dastūr* of Meerut, which was subordinate to the chakla of Sikandarabad (now in the Bulandshahr district), and the chakla itself was in the sirkār of Sahāranpur and sūbah of Delhi. Tappa Lāwar and twelve others were included in parganah Meerut. The tappas of Chhaprauli are given under the notice of that parganah.

The munsif of Meerut has civil jurisdiction over the Meerut, Hāpur, and Mawāna tahsils and the Sardhana parganah, and the munsif of Ghāziabad over the Bāgpat and Ghāziabad tahsils, and the Barnāwa parganah. They, together with the munsif of Bulandshahr, are subordinate to the Civil Judge of Meerut. Up to 1858 there was a munsifi at Hāpur, which was then transferred to the Meerut munsifi. In 1861 the Sardhana munsifi was transferred to Ghāziabad. The parganah *kázis* were entrusted in the early times of our rules with civil jurisdiction, and were called native commissioners, and subsequently munsifs. Up to 1814 they received two per cent. on the institution fees in suits tried before them, and their jurisdiction seems to have been conterminous with that of the thánadār or police-officer. In 1832 the munsif system as now existing was established. The Judge used to have an assistant called a “register” (1). The Civil Judges known as Sadr Amíns and Sadr-us-Sadúrs were appointed at the same time as the munsifs, and are now known as the Subordinate Judges. The following table gives the number of courts in existence in the district in the years named :—

Names of courts.	1822-23.	1850-51	1860-61.	1875-76.
Magistrates' courts, ...	1	7	11	17
Civil Courts, including revenue, ...	...	10	10	13
Covenanted officers at work, ...	2	5	4	4

In 1822-23 there were four revenue courts, those of the judge, register, and the kázis. Criminal cases used to be decided usually on the kotwál's report. The courts of the honorary magistrates and of canal officers invested with

criminal jurisdiction are included in the entry for 1875-76. In the same year the temporary court of the Settlement Officer is included among the civil courts, and that officer among the covenanted civil officers employed in the district. There are thirty-two police-stations in the district, each of which is noticed separately under the town in which it is situated. The establishment in Meerut in 1875 comprised the Commissioner of the Division, the Civil and Sessions Judge, the Magistrate and Collector, three covenanted Assistants, two Deputy Collectors, six Tahsildárs, a Subordinate Judge, two Munsifs, the Superintendent of Police, Superintendent Central Jail, Cantonment Magistrate, Civil Surgeon, Inspector of Education, 1st Circle, a Chaplain, and four Honorary Magistrates, besides a very large military establishment.

The Meerut district is in shape nearly a square, presenting a level alluvial plain without any hills or even eminences of any magnitude. The top of the fifteenth milestone from Meerut on the Muzaffarnagar road has an elevation of 772·2 feet above the level of the sea, diminishing to 739·3 feet at the Meerut church, and following the Grand Trunk Road to Aligarh, the tenth milestone shows an elevation of 720·93 feet; Kharkoda encamping-ground is 713·51 feet, the eighteenth milestone is 705·3 feet, and Hâpur encamping-ground is 692·94 feet. This sufficiently shows the slight nature of the fall in elevation from the north to the south of the district. The following table of ascertained heights above the level of the sea is taken from the table of heights published by the Great Trigonometrical Survey. (See further the notices of Meerut city, Dateri, Dholri, Saini and Saroli):—

	Feet.		Feet.
Top of 15th milestone from Meerut, ...	772·20	Top of 8th milestone on Aligarh road, ...	722·04
Ditto 14th ditto ditto, ...	770·00	Ditto 9th ditto ditto, ...	721·53
Ditto 13th ditto ditto, ...	766·20	Ditto 10th ditto ditto, ...	720·93
Ditto 12th ditto ditto, ...	762·60	Kharkoda encamping-ground, ...	713·51
Ditto 11th ditto ditto, ...	761·43	Top of 11th milestone on Aligarh road, ...	719·95
Syphon canal bridge parapet of drain, ...	757·89	Ditto 12th ditto ditto, ...	715·52
Dhaurâra chauki, ...	753·25	Ditto 13th ditto ditto, ...	711·05
Top of 8th milestone from Meerut, ...	754·80	Ditto 14th ditto ditto, ...	710·49
Ditto 7th ditto ditto, ...	753·38	Ditto 15th ditto ditto, ...	708·38
Ditto 6th ditto ditto, ...	750·18	Ditto 16th ditto ditto, ...	706·21
Ditto 2nd ditto ditto, ...	741·08	Ditto 17th ditto ditto, ...	701·23
Meerut Churchyard (I.), N.-W. corner, ...	734·46	Ditto 18th ditto ditto, ...	705·30
Ditto (II.), W. wall, ...	735·47	Hâpur encamping-ground, ...	692·94
Ditto Church central west doorway, ...	739·30	Surface of plinth of 19th milestone, ...	699·66
Top of 1st milestone on Aligarh road, ...	733·35	Top of 20th milestone on Aligarh road, ...	696·92
Ditto 2nd ditto ditto, ...	735·49	Ditto 21st ditto ditto, ...	695·12
Ditto 3rd ditto ditto, ...	733·62	Surface of plinth of 23rd milestone, ...	691·25
Ditto 4th ditto ditto, ...	732·79	Top of 24th milestone on Aligarh road, ...	693·44
Ditto 5th ditto ditto, ...	730·25	Ditto 25th ditto ditto, ...	687·30
Ditto 6th ditto ditto, ...	729·03	Ditto 26th ditto ditto, ...	690·40
Ditto 7th ditto ditto, ...	724·59	Ditto 27th ditto ditto, ...	690·10

The eastern portion of the district is very well wooded, and to the west portions of the tahsils of Ghâziabad and Hâpur and the entire Bâgpat tahsíl are

thickly sprinkled with mango groves, and along the canals there are lines of fine *śāśham* and other trees, but with the exception of some large patches of *dhāk* (*Butea frondosa*) there is nothing that can be called jungle. There must be a large yearly decrease in these tracts, for in all directions they are being encroached upon by the plough. There are no *úsar* plains in the district, and the comparative absence of the saline efflorescence known as *reh* is marked. The only tracts that are said to be affected by it in any material degree are the low-lying lands of the Hindan and the Ganges river bed near Hastinápura, and in these cases the saline matter may have been brought down in time of flood. From a statement of barren lands, including village sites, in this district, it appears that under the measurements of Regulation IX. of 1833 there were 233,453 acres barren, and under the measurements of the present settlement 190,018 acres, showing a decrease of 43,435 acres. This is due, in a great measure, to the fact that in the former settlement many tracts were entered as *úsar* or barren which were in reality fallow. In the Loni parganah, owing to the pressure of labour on the cultivable area, the barren area has fallen from 21,469 acres to 13,410 acres. In Bágpat the barren area has been reduced by one-half, or 13,000 acres, and similarly throughout every parganah the land returned as barren has been considerably diminished. This has occurred, though the *úsar* tracts in many resumed *jágírs* and revenue-free patches have been included in the returns of the recent settlement. There are no hills in the district, and with the exception of such *tílds* as the Lákha Mandap of Barnáwa and a few *khe-ras* or mounds, and here and there a low sandbank, there is no rising ground anywhere. The whole district is a well-cultivated plain, and the ground is nowhere uneven save in the *khádir* or river-beds. This uneven land is called by the inhabitants *khaola*, and sometimes *khála* or *khala-ki-zamín*.

In this district there are six classes of soil recognized by the cultivating population:—*dákar* land, which is loamy; less loamy soil is called *mattiyár*, and still less loamy soil, *seota*. In *rausli* sand is found, more sand still in *bhár*, and *ret* is altogether sand and uncultivable. All the principal crops grown in the district may be produced in *mattiyár* and *rausli*. Rice, gram and peas are sown in *dákar*, and *bágra*, *moth*, *tára*, and *til* in *bhár*. Large tracts of *dhák* jungle have been brought under the plough at a comparatively small expense, and by the application of manure have been rendered highly productive; but it must be remembered that the *dhák* never flourishes in a really bad soil. Besides these jungle tracts, patches of *daldal* (or sandy bog) and *rehwáli* (or land on which *reh* has accumulated) have been reclaimed by Mr. John Michel of the Dásna factory. The *daldal* has yielded to extensive and deep drainage works, and the reclamation of *rehwáli* has also been most successful. The plan adopted by Mr. Michel was first to plough the land on which *reh* was found. Then large quantities of vegetable matter, usually the refuse

indigo stalks, called in this district *siti*, were burned on the ground, and the ashes, and afterwards the silt brought down in the canal rajbalias, were ploughed in. A few more ploughings and the application of more vegetable manure makes the land productive. Some land that has been reclaimed is now bearing excellent crops. The drawback is that the expense necessarily incurred is equal to the market value of good *rausli* land. It is said by some zamíndárs that land on which *reh* has accumulated after ten years of canal irrigation may be recovered by a plentiful sprinkling of manure and by allowing the land to lie as mere *baráni* (or rain-irrigated land) for two or three years. This is very probable, for by shutting off the canal supplies the land is allowed to become dry, and it is almost a matter of certainty that *reh* is never produced except by the water-logging of the soil which zamíndárs are constantly bringing on themselves by recklessly over-irrigating their fields.

There are no wide uncultivated pasture grounds in the district except the Ganges *khádir*, where it is estimated that from eight to ten thousand head of cattle are occasionally grazed during the year. But the value of this pasture ground is diminished by the fact that the grass which grows most luxuriantly is *panni*. This grass is coarse and injurious to cattle, and in the rains no grazing can go on. The *khádir* is very wide, and the grazing lands in some parts extend up to the Búrj Ganga, or old course of the Ganges, some five miles inland. Generally no fees are paid by the zamíndárs of the neighbouring villages, but when, in times of scarcity of fodder, cattle are brought down from Meerut, Hápur, and distant villages, a rate of six annas the acre is levied, and the few Chamárs and Ghosís who make grazing their principal occupation receive two annas a month for each cow or ox, and four annas a month for each buffalo. In the village of Púth alone there are 662 acres of pasture grounds, and in the parganahs of Púth and Garhmuktesar 15,472 acres. The cantonment grazing grounds are extensive, and produce an annual income of Rs. 4,000 to 5,000. The graziers on these grounds are mostly Musalmán Gadís and Ghosís. There are other pasture grounds on the banks of the Hindan and Jumna, but these are small in extent.

The general direction of the drainage is towards the south, and in viewing it as a whole the district may be divided into four tracts running parallel with each other from north to south. The first of these lines lies between the Jumna on the west and the Hindan on the east, and may be called the Jumna-Hindan Duáb. It is the richest tract in the entire district, consisting of rich black loamy soil, which renders the parganahs within it the most fertile in the district. It is bounded by narrow strips of soil of inferior quality skirting the two rivers, and appears to stretch without interruption

Pasture lands.

Lines of drainage.

The first tract.

from Chhaprauli on the north, well into parganah Loni on the south, where it narrows into a tongue of land stretching far into the Hindan-Jumna *khádir*. It is here bounded on the east by the river Hindan, and on the west by the high ridge separating the uplands from the Jumna *khádir*. As this ridge is approached the soil deteriorates and on the ridge itself is very inferior, being broken by small ravines and having an irregular surface. Below the ridge the wide expanse of the Hindan-Jumna *khádir* is met, which stretches into Dankaur in the Bulandshahr district and gives rise to a number of shallow depressions, which, however, are nearly always covered with water to the depth of two and three feet. The upper portion of this alluvial tract contains good soil and is highly fertile, but the lower portion towards the Jumna consists only of wide expanses growing the poorer grasses used for thatching. To the north, the sluggish streams known as the Krishni and the Bánganga conveys the drainage into the Hindan on its right bank; further south the drainage lines are ill defined.

The second tract, comprising the lands lying between Sardhana on the north, the Hindan watershed on the west, and the Ganges watershed on the east, has a slope towards the east.

The second tract. To the west the boundary may be traced by the course of the Ganges Canal, which here follows the watershed between the Hindan and the East Káli Nadi. To the north this central tract is nearly level, as shown by the slight cut required to lead the waters of the West Káli Nadi from near its confluence with the Hindan into the Kholára Nála, a tributary of the East Káli Nadi. From the east, too, the drainage lines converge in the form of the Chhoiya on the same stream. In fact, east of the Ganges Canal the entire drainage is carried off by the Eastern Káli or its tributaries into the Bulandshahr district. The natural formation of the stratum which composes the floor of this basin is described as slightly sandy, of a reddish colour; and Mr. Forbes gives a very clear description of the way in which drainage converts it into sand. But, except when immediately affected by drainage, the whole of the central tract is a level plain without appreciable incline, which becomes consistent and loamy wherever a flat or depressed surface favours the accumulation of deposit, and is not subject to impoverishment by drainage. When, on the contrary, it is cut up and traversed by drainage, the soil becomes more or less sandy and unfertile. The main difference between the northern and southern portions of this central tract is, that while the north receives little of the accumulated rainfall from other places, the south is plentifully supplied with water by the drainage lines from the north. There is a still greater difference between the west and the east tracts. The west consists mainly of level land full of alluvial accumulations, and especially in the south has much rich loamy soil, all of which is culturable; but to the east the surface of the country is not only broken up by the central lines of drainage, but on its most easterly edge begins to exhibit the deteriorating influence of the Ganges.

The third tract is that which is affected by the drainage towards the Ganges. Its chief characteristic is the presence of rolling waves of sand which continually change their position. They chiefly follow the lines of drainage, and throw out lateral spurs of the same character as they proceed. These sand-dunes no doubt owe their origin to the mixture of sand in the stratum through which the drainage lines run. The sand left behind by the drainage is blown into banks or dunes by the wind, which in some instances drives the sand over the entire surface of the plain. These dunes are by no means confined to the immediate vicinity of the Ganges, and although the course of the drainage and the presence of a canal marks a level watershed east of the large central tract which intervenes between the drainage southwards to the Káli Nadi and the drainage eastward to the Ganges, yet sand-dunes are found running along the drainage lines on the Káli Nadi side as well as on the Ganges side. One more remarkable than the rest follows the direction of the drainage from the Saháranpur district in the north to the Eta district in the south, passing close by the city of Meerut, where it is used as a butt for artillery practice. Both the Saráwa and part of the Hápur parganahs are greatly impoverished by the drainage which is thus concentrated, and there is so much sand in Saráwa that there is little doubt that it is one of the poorest parganahs of the district. As a rule, the interstices of the level plain left between the sandy undulations and slopes of the central drainage tract are wider than those found in the approach to the Ganges valley. These level interstices are capable of very high cultivation, and are, indeed, in character the same as the level plain of the second division, to which they really belong, while the sandy undulations rank in the third class, which consists mainly of the sandy incline to the river Ganges. The alternations of good and bad land appear to be sometimes very remarkable; but as the eastern slope is approached the level intervals seem to become fewer in number, narrower in width, and more liable at any future time to be overlaid by the still restless sand-dunes, until they disappear altogether in the ravines of the Ganges cliffs, which are slowly and surely eating their way further and further inland. The fourth tract is the well-known low

khádír land of the Ganges valley. It is bounded on the east by the river Ganges, and on the west by the raving cliff, under which, for three-fourths of its length from the north, runs the Búrh Ganga, an old bed of the Ganges, which is connected with the main stream by several smaller water-courses. The *khádír* is said to be very capable of cultivation, but it is in many parts covered with grass jungle, full of pig and other wild animals, for which the cultivation which might take its place is not substituted through the neglect of bad cultivators and unimproving landlords. The prevalence of poor soils and the over-saturation of the good

soils from the increased volume of water in the Búrĥ Ganga have, no doubt, much to do with the backwardness of this tract. To such a degree has the latter evil increased of late years that, in 1874, it was reported that "more than half the cultivated area of the villages along the course of the Búrĥ Ganga has been rendered unproductive." A scheme is under preparation for the relief of these lands, and it will then be seen how far the *khádir* of the Ganges in the Meerut district is capable of improvement.

Each of these drainage tracts has a minor system of its own, carrying into the main arterial lines the surplus waters of smaller drainage areas, which are again subdivided within themselves until the difference in the level and the

Minor reticulations within each tract.

direction can only be detected by the most minute and careful processes. The differences in the heights throughout the district and in the levels along the course of the canal have been given already, and will materially aid in the elucidation of this important drainage question. Amongst the minor drainage lines of the central tract the most important is the Abu cut from the Western Káli, which crosses the line of the canal near Chabandi in parganah Meerut, and flows in a south-easterly course to the East Káli river.

In 1868-69 the nála was cleared out and otherwise improved in its upper branches, and a diversion cut was excavated north of Meerut to carry a portion of its waters by a more direct line to the East Káli Nadi. The portion of the nála running through Meerut was repaired and enlarged at the same time, but still showed such defects that orders have recently been issued for the execution of a project embracing the thorough and efficient drainage of the city and cantonments. Connected with the nála is the Alipur line of drainage, which begins at the line of *jháls* to the north-east of the town of Sardhana, and runs through the villages of Kalinjar, Madárpur, Alipur, and, by a culvert, beneath the canal distributary until it finds its way into the old Abu cut at Pábli. A second line commences to the south of Sardhana at the village of Mandiaí, and passing close to Bahádurpur and Paholi, becomes a marked line in the *dhák* jungle of Bajhera, near to which it joins the Abu nála. The Sardhana artificial drainage cut is a valuable line, which extends considerably to the south of Nánu, and thence through Naurangpur and Kalina into the Hindan; it was completed before the rains of 1874, and, except at the very head, has proved efficient. A scheme known as the Khádirabad drainage system, and comprising five cuts, one each at Dhandala, Khádirabad and Hawal, and two at Shaikhpora, drains the country lying to the left of the main canal from Dhandala by Begamabad to Bhatiana, and tails into the East Káli Nadi. All the drainage to the south of Bajhera forms a portion of the head-waters of the great Saráwa line, which eventually joins the Káli below Hápur. A second and somewhat parallel line collects to the south-west of the Saráwa line as far north as Bhola

and Jání khurd on the canal, and passing by Begamabad and Bhojpur enters the East Káli about a mile below the Saráwa drainage line, just on the borders of the district. The drainage to the east of the Káli is collected by the Chhoiya from Niloha southwards, and the bed of this stream has been widened and improved. A second branch of the Chhoiya running between the left main distributary and the canal, and having a catchment basin which extends from the neighbourhood of Sardhana to a point opposite Meerut, is to be provided for in the Karauli drainage scheme. At present syphons exist at all the distributaries by which it is crossed except one, which is cut in the rains to admit of the passage of flood water. West of the Ganges Canal a line of drainage starts from Niwári, which runs through Sohána into the Hindan, and south of the Bhola falls on the canal are the partly artificial and partly natural drainage lines of Kaura and Shaikhपुरa. Another important minor line of drainage between the Ganges canal and the Hindan is that connecting the *duhurs* of Mattiyála, Kusalya, Dásna, and Masúri in parganah Dásna, which runs thence through Sháhpur, and finally discharges itself by a well-defined channel between the villages of Ohhapiyána and Ohhaprauli into the *khádir* near the junction of the Hindan and the Jumna. The surplus rainfall to the east of the town of Dásna runs in a line between Pipalhera, Shaikhपुर, and Amapur Lodha, and floods the lands of Hasampur in the rains. This line of drainage is much obstructed by the Masúri rajbaha, and only finds an outlet for its waters in the Bulandshahr branch of the Ganges canal. Another line in the same parganah, starting at Náhal, and running through Dabársi and Galand and on to Dhaulána, has been so impeded by distributaries as to cause serious swamping in the town of Dhaulána. To remedy its condition and to drain the country lying between the canal and the left main distributary, from Dásna to Baral in the Bulandshahr district, a series of cuts are now in course of construction. It is also intended to utilise, as far as possible, Mr. Michel's cut, and the drainage of the Hasampur *jhil* will form a portion of the Kot drainage scheme in the Bulandshahr district. The drainage from the north-eastern portions of parganah Dásna and the south of Jakálabad finds its way by Faridnagar, Pilkhwa, Khairpur and Dalpa into the Begamabad and Bhojpur line. A survey is now being made, and measures will soon be taken to improve the outfall of the East Káli Nadi to the latitude of Bulandshahr, and as it will now have to carry off a considerably increased flood volume, due attention will be had to this fact in all designs for bridges and works connected with it.

The minor drainage lines of the Jumna parganahs are quite local, and the areas drained by them are very small. The drainage system known as the Kirthal is a tributary of the Jumna, and embraces an area of about 50 square miles, of which about seven square miles lie to the east, and the remainder to the west of the Eastern Jumna Canal.

The Jumna tract.

The general direction is from north to south, the length to where it begins to fall into the Jumna valley is about 18 miles, and the Kirthal drainage scheme. average breadth about $2\frac{3}{4}$ miles. The limits of the system on the north is the Kándhla minor distributary, which leaves the canal at the 79th mile; on the east, the canal from the 79th to the 83rd mile, a watershed to the west of the canal from the 83rd mile, and rejoining it three miles further south, the canal again to the 92nd mile, and a watershed to the east of the canal from the 92nd to the $96\frac{1}{2}$ mile: on the west, the Kándhla distributary to near the village of Hewa, thence a watershed running between the Kándhla and Nála distributaries and meeting the latter near the junction of the Rúmala distributary, and beyond that the Nála distributary. The whole area is irrigated more or less from the canal, and the evils arising from over-saturation were felt ten years ago, and led to the excavation of the Kirthal drain in 1866-67, which tails into the Jumna near Khánpur. This cut was never completed to the depth intended. It is now proposed to make this drain the main artery of the new scheme, and by means of branch drains from all the minor catchments to tap all the principal depressions in the tract; culverts and syphons will be provided under all distributaries which at present obstruct the drainage. The main drain will have a slope 1.75 per mile, and will carry four feet of water, the bed width varying from six to twelve feet, and the side slopes being everywhere at an angle of 60° . A portion of the drainage near Kakripur to the north of the Kirthal scheme passes below the Eastern Jumna canal into the Krishni Nadi in the Baraut parganah.

The drainage system known as "the Aláwalpur system," from the village near which it crosses the canal, is also a tributary of the Jumna. Its catchment down to the Baraut and Aláwalpur drainage line. Bágpat road, where it passes through the Jumna *bánger*, is 36 square miles, and is bounded on the north by the Kirthal system; on the east by a system discharging into the Hindan river; on the south by a system known as the Deola, which also discharges into the Hindan; and on the west by the Jumna *bánger*. The general direction is south-west. This drainage line is not well defined until it crosses the canal, when it becomes a broad and easily traced valley, gradually deepening as it nears the Jumna, which it joins close to Bágpat. Shortly after crossing the canal it is joined by a branch of considerable size, which, starting from near Barauli to the west of the canal, runs with a southerly course parallel to the canal to its junction with the main line. There are three other minor depressions connected with this system,—one to the east of the canal near Aláwalpur, which joins the main line at the canal; one to the south-west of the canal from Kayámpur, and a third close to Shaikhupur, which joins the Barauli branch. The outlet is at present obstructed by the canal, by distributaries and by watercourses, and it is proposed to remedy

this by excavating some five drains—the main drain and the Idrispur, Kayámpur, Barauli, and Shaikhupur branches. The existing main drain commences in some depressions near Bajraul in parganah Baraut, and enters the *khádir* of the Jumna after a course of $15\frac{1}{2}$ miles. This will, in the new project, still form the main arterial line. To complete the drainage schemes of the Jumna parganahs, a very large drainage area known as the Deola tract lying along the loft bank of the canal from mile 99 to mile 117 has been surveyed, and in connection with it a scheme for its drainage has been prepared. When this has been taken in hand, and a few minor drainage cuts to the west of the canal have been excavated, all that is known regarding the present drainage requirements of the lands bordering upon the Eastern Jumna Canal will have been completed. The original drainage line to the west of the canal can still be traced by Ládwarí and Niwári to the Jumna. Another line known as the Khekara line rises to the south-east of the village of the same name in parganah Bágpát, and runs past Fírozpur and Nagla Bári in the same parganah, and Gansaul and Charauri in Loni, into the canal at its 122nd mile near Shaikhupura. It has no defined channel until it reaches the village of Gansaul. The canal occupies the lower portion of its original course, and before the canal was excavated this line used apparently to run by Shahdara to the Jumna.

The principal rivers of the district are the Ganges, Jumna, and Hindan. The
 Rivers. Ganges enters the district from the east of Muzaffarnagar, and flows at first in a southerly and afterwards in a south-south-westerly direction, separating this district from Bijnaur and Moradabad. It receives in its course the Búrh Ganga or old
 Ganges. bed of the Ganges. The velocity of the stream varies at different periods of the year. In July and August boats descend at the rate of 45 miles in a day of twelve hours, and in September and October from 15 to 20 miles; but in the winter months, November, December and January, not more than eight or nine miles. Since the opening of the railroad the Ganges in these parts is not so much used for carriage as formerly, and owing to the distance of the stream from the banks can be of very little use for irrigation. Fruits of the melon kind alone derive advantage from its waters, and the cultivation of these is very small in the *khádir*. The only town of importance on its banks in this district is Garhmuktesar. The bed of the Ganges is sandy, with here and there an underlying stratum of *kunkur* or nodular limestone. The banks suffer slowly from erosion, but loss from diluvion or gain from alluvion seldom occur, though one village, however, has been entirely swept away by floods within the last four years. The action of the Ganges in time of flood in former years, when it occupied the course of the Búrh Ganga, must have been considerable, for it is given as a cause for the abandonment of the old city of Hastinápur for

Kausambhi many centuries before the Christian era. Regulation IX. of 1825 and the instructions of the Board of Revenue regarding alluvion and diluvion are in force throughout the district. It is said that the village administration papers of the recent settlement do not contain any special rules for the settlement of disputes between riparian proprietors, and that the general law applies in all such cases. There are no islands or remarkable *chars* in the Ganges, but there are several of the latter of some extent in the other rivers of the district. The banks of the Ganges are gently sloping on the one side and abrupt on the other, according to the position of the main stream. The beds of the other rivers are nearly all situated in shallow depressions, extending on each side from a quarter to three-quarters of a mile in extent. In some parts the Ganges valley, known as the *khádír*, is over five miles in breadth. The Ganges is only fordable at particular places during the cold weather, one of which is Púth. It is at all times navigable for vessels not exceeding 100 maunds burthen in this district. There are no rapids or eddies (*bhanwar*) in any of the rivers except during the rains. There are ferries during the rains and bridges-of-boats during the cold and hot seasons on the Ganges at Garhmuktesar and lower down at Púth Sakratila. Above these are Ranli, Dáranagar, Jáfirabad and Makhdúmpur, the management of which is in the hands of the Collector of Bijnaur. Up to 1844 the Garhmuktesar ghát was in charge of the Collector of Moradabad.

The Jumna enters this district from Muzaffarnagar and flows in a south-south-westerly course along the western boundary of the district. It receives on its left bank the surplus waters of the Eastern Jumna canal in parganah Loni. The bed of the river is so low that irrigation from it is impracticable, and its waters are only used for the cultivation of melons, which grow in great luxuriance and are much prized for their excellence. The towns of Chhaprauli, Kutána, and Bágpat are situate on the high bank of the river, and lower down, but not on the banks, are Loni, Shahdara, and Patparganj, the last of which is only a mile distant. Loni is three miles from the Jumna, and Shahdara but two. In time of heavy flood the river approaches close to the skirts of these towns, but the Jumna, though the stream is very deep and strong, seldom causes alluvion or diluvion. Every October an examination is made of the villages liable to fluvial action, and wherever a change exceeding ten per cent. of the culturable area has occurred, a readjustment of the land-revenue is made. In the Bágpat tahsil the banks of the river are frequently steep and abrupt, especially near the sites of the larger towns; lower down, in Gháziabad, they are sloping in all places and low. Occasionally eddies appear, but they are nowhere found obstacles to navigation. In the hot weather, the river is fordable nearly everywhere in this district, and is navigable only for boats of less than 100

maunds burthen. There is a public ferry at Salimpur just opposite Dohli, where there was formerly a boat-bridge, but since 1866 the passenger traffic has been provided for by the railway bridge. There are private ferries at Jagatpur in parganah Loui called Ghát Wazirabad, from the town of that name on the opposite side of the river, and in the same parganah at Badrpur and Chilla Saraudeh, called respectively Ghát Barári and Ghát Okhliya, from the villages on the other side of the river. There is another ghát at Bágpat, managed by the Collector of Meerut. In May, the melting of the snow, within the drainage area of the Jumna in the hills, causes a considerable rise in the river, but not so much as in the rains. The low cultivation alone is benefited by these floods, whilst everything else is damaged, and very frequently the injury caused is considerable. Navigation has decreased very much since the opening of the Eastern Jumna canal has reduced the volume in the river, and recently the construction of the weir at Okhla, for the head-works of the Agra canal, has rendered it difficult for boats of 100 maunds and upwards to proceed downwards to Agra. The number of boats engaged in trade is yearly diminishing, as well from these canal difficulties as from the opening of the railway.

The Hindan enters this district from Muzaffarnagar at the village of Pitlokhar, where it is joined by the West Káli Nadi. It thence
 Hindan. takes a south-south-westerly course through this district to the Bulandshahr district. The *khádir* of the river varies in width: at Malahra it extends for a mile on each side of the stream, whilst at Barnáwa it is little more than a quarter of a mile in breadth. The river is nowhere fordable in the rains, but at other times there are numerous fords, some of which are not two feet in depth. The Hindan is not navigable except during the rains, when boats ply for the convenience of passengers. There are ferries at Barnáwa and Baleni, and opposite to Malahra is the Nágwa Ghát, the management of which rests with the Muzaffarnagar authorities. There is a bridge of-boats at Baleni. Colonel Cautley in 1840 proposed that a still-water navigable channel should be drawn off from the Ganges Canal, from a point near Murádnagar, to the Hindan, in order to connect the navigation of the Ganges canal with the Jumna. With a view to ascertain the capabilities of the Hindan, he had (transverse) measurements taken of the width and depth at every thousand feet in length, from the bridge which crosses the river near Gháziabad to the Jumna. These measurements were taken in April, and showed that, with the exception of one place near the village of Gojar, where the depth of water in the river varied from 1·4 to 1·3 foot, the average depth might be estimated at between 3 and 4 feet, on a width varying from 50 to 190 feet. The distance between the bridge at Gháziabad and the Jumna is 30·25 miles, the course being exceedingly tortuous, and for its whole length through low *khádir*

land.¹ Irrigation from the river, except for melons, is never practised. Land inundated by the Hindan is occasionally cultivated for the rabi crop, and the harvests are very luxuriant. The river water in time of heavy flood sometimes produces *reh* in the low gently sloping lands of the *khúlir*, but a short temporary inundation is a cause of fertility, and the succeeding *rabi* is almost invariably a rich one. No alluvion or diluvion is caused by this river. The only town of importance on its bank is Barnáwa. It is crossed by an iron bridge of five spans of 80 feet each near Asthala on the Aligarh and Dehli road, and also by the railway bridge a few hundred yards lower down the stream.

Besides the larger rivers there are several lines of drainage or watercourses deserving of notice, such as the Abu Nala, Bánganga, and Chhoiya Nála, and several *ganda nálas* or drainage cuts, the majority of which have been constructed by the Canal Department. The most important of these minor streams is the East Káli Nádi, usually called the Nágan in this district, which rises in the south of the Muzaffarnagar district and flows southwards by Gesupur and Hápur, and thence onwards through Bulandshahr and Aligarh, until it joins the Ganges in the Fatohgarh district. It contains very little water here except in the rains, and is never navigable. No injury is ever caused by its overflowing its banks. There is a brick bridge over this river at Muzaffarnagar Saini and an iron bridge at Gokalpur or Gesupur. The Chhoiya, a tributary of the Káli, rises at a point close to Niloha in the Hastinúpur pargana. It takes a southerly direction, and after a course of about thirty miles joins the East Káli about nine miles below Hápur. Its character is precisely the same as that of the Káli. In the early part of its course it is an ill-defined

¹The measurements will be found tabulated in Appendix G. of the history of the Ganges Canal by Colonel Cautley. The following table gives the approximate breadth and depth in time of flood, &c., of the three important rivers where they are crossed by each road:—

Road.	In time of flood.		In rains generally		In the dry season.		Nature of bottom.	Number of boats ready	Remarks.
	B.	D.	B.	D.	B.	D.			
<i>Hindan River.</i>									
G. T. R. Aligarh to Dehli.	400	14	400	10	150	7	Silt and sand,	1	Bridge.
Meerut to Bágpát (Balni).	700	14	300	10	80	7	Clay, ...	8	Bridge-of-boats except in rains.
Meerut to Shámli,...	358	10	225	5	200	3	Sand, ...	<i>Nil.</i>	No means of crossing in rains.
Sardhana to Baraut,	380	10	215	5	100	4	" ...	8	Bridge-of-boats except in rains.
Bágpát to Jalálabad,	700	14	300	10	80	4	Clay, ...	1	One boat in rains.
Daula to Sardhana,	600	14	300	10	80	4	" ...	1	Ditto.
<i>Krishni River.</i>									
Sardhana to Baraut,	190	11	135	6	75	5	Sand, ...	5	Bridge-of-boats except in rains.
<i>Bárh Ganga.</i>									
Kumruddinagar,	326	4	100	1.5	dry, dry,		Sand and clay,	<i>Nil.</i>	Fordable in rains.

straggling nála, running through low ill-cultivated land, and, except in the rains, perfectly dry. In the latter part of its course, and on its junction with the Káli, it carries a sluggish stream through a deep section, with a valley more or less extended.

The Abu Nála, which runs through Meerut Cantonments, consists of a cut from Abu Nála. the West Káli Nadi at Faridpur in parganah Sardhana, originally intended to convey the waters of that river to Meerut. The portion of the cut between the West Káli and the Ganges canal is now utilised as a canal escape. To the east of the Ganges canal the Abu Nála is connected with and often gives its name to the line of drainage which runs southwards by Pabli, and under the name of the Khodara Nála forms a junction with the Nágan or East Káli Nádi at Kamálpur. The length of the original Abu cut was only about $12\frac{1}{2}$ miles from the West Káli to the heads of the Khodara Nála; it had a breadth of about 15 feet, and was excavated only a few feet. There is no tradition of its ever having been a running stream, and it could never have been of much practical benefit. The Saráwa line of drainage, already noticed, which joins the East Káli river on its right bank near Mushrifpur, on the borders of the district, assumes somewhat the characteristics of a continuous chain of hills in the vicinity of Asaura, in parganah Hápur, with a width of 200 feet and a depth of about two feet. These isolated pools become connected in the rains and form a running stream southwards. The rabi crops close to the edge of this drainage line, as on the Bhojpur line and the lands in the vicinity of the Chhoiya, are excellent; but on the Chhoiya rain-crops are not attempted, whilst on the other two they are sown in favourable years. The Bánganga flows between the Hindan and the Krishni, and enters this district from Muzaffarnagar at the village of Dhanaura, and runs for eight miles to Sháhpur. It is sometimes dry, but in the rains the depth of water is frequently four or five feet. Its breadth is on an average fifty feet, but there is no navigation, and little irrigation from it at any time. Attached to it is a legend that when the great battle of Kurukshetra was fought between Yudhishtira and Duryodhana, the Pándava Arjuna shot an arrow with such force into the earth at Muzaffarnagar that it tore up a furrow as far as Sháhpur, and so deep did it penetrate that water sprang forth and a stream was formed; and to remove geographical difficulties, the great battle is said to have been fought on the east of the Jumna. The word '*bán*' is the Hindi form of the Sanskrit word meaning 'an arrow,' and from Kumaon to Bundelkhand a similar legend is related of all streams bearing the name Bánganga. In parganah Hastinápur the Búrh Ganga enters the district at the village of Saifpur Firozpur, and flows southwards into parganah Kithor as far as the village of Kíratpur Bádsháhpur. In its course it forms one large island, about six miles in length, opposite the village of Hastinápur, and a peninsula of a similar size opposite Nagla Gosháin. The western branch of the Búrh Ganga here is known as Jhíl Garhi, and occupies portions of the villages

of Garha, Akbarpur, Humáyūnpur, Garhi, Nagla Gosháin, Agwánpur, Muzaffarpur, Kaunti, and Bágpur. Connected with the Búrĥ Ganga is a jhíl known from the village of Latífpur, which includes portions of ten villages, but it is dry except during the rains. All through its course small depressions connect the Búrĥ Ganga with the *kháílir* proper of the Ganges; and between it and the Ganges is often a large expanse of water called *soti*, a word frequently applied in this district to the lowlying lands forming a broad shallow watercourse in the rains, and to the subsidiary beds of a stream lying parallol to the main bed. These depressions are usually dry except during the rains. The *soti* here extends from the north of Hastinápur as far as Khánpur Garhi in parganah Kithor, and near this village the southern extremity of the Búrĥ Ganga is known as the Kála Páni.

There are three main lines of canals in this district. That to the west, known
 Canals. as the Eastern Jumna canal, supplies the rich Ját tract of the Jumna-Hindan Duáb with a close net-work of distribution canals. This work was opened in 1830. The second is the centre or main branch of the Ganges canal, irrigating the country between the Hindan and the Káli Nadi, opened in 1855. The third is the Anúpsahar branch of the Ganges canal, watering the tract between the Káli Nadi and the Ganges, and opened in 1860. Between the last two there is a tract occupied by the Káli Nadi and its feeders, which exclude canal channels from the south-east of Meerut, Hápur, and Saráwa. Another tract, cut off from canal irrigation, is the northern half of parganah Barnáwa.

The Ganges canal enters the district from Muzaffarnagar. The course of the
 Ganges canal. canal proceeds direct from the heads of the East Káli Nadi and Khátauli until it approaches the town of Sardhana, where it inclines a few degrees nearer to the south, thereby avoiding contact, at the most exaggerated part of the ridge, with a line of sandhills which curve partially around the northern side of the town. The East and West Káli Nadis form the eastern and western boundaries of the canal tract, the line itself however keeping somewhat nearer the latter. The West Káli Nadi in the latitude of Sardhana joins the Hindan river, which by its westerly course, and by a consequent departure from the bearing upon which the Káli Nadi runs, places the canal upon a wider field, the transverse distance between the two rivers being at this point equal to fourteen miles. Higher up, not far from the village of Jawálagarh, the canal channel intersects the Abú Nala. Marks of excavation for the nála commence at two points on the West Káli Nadi, the most northerly near the village of Rámpur, and the other six miles to the south at Farídpur. These two lines form a junction on the right of the canal, and afterwards proceed in an oblique direction across the canal to the head of the Khodara Nala, which passes through Meerut¹. At this point of intersection an escape cut has been made leading along the old line of Abú's cut to Farídpur, a distance of seven miles. The differences of level

¹ Ganges Canal, I., 211.

from the bed of the canal to the West Káli river is 23·9 feet, and the works are the same as those described at Khátauli in the Muzaffarnagar district. The canal in its course then passes on its left the towns of Meerut, Begamabad, and Jalálabad, the first at a distance of eight miles from the nearest point of alignment. From Siwal khás a series of curves on radii of from three to five miles commence, for the purpose of meeting the watershed of the country, which henceforth takes a direction more to the east. Those curves continue to Rauli, a little below Jalálabad. The width of the country over which the canal passes measured transversely across the canal between the East Káli and the Hindan, is 15·5 miles at Sardhana. This width increases in advance until at Jalálabad the two rivers are 26 miles apart. At Sardhana the canal runs centrally between these boundaries, but as it advances it approaches the Hindan, until at Dhaulari it is only four miles apart. The intervention of the Chhoiya, a tributary of the Káli, has caused this close approximation to the Hindan, and the course of the main canal has been, in a great measure, dependent on this nála and the low lands which lie near it. The slope of the surface of the country is about 35 feet, which averages 1·75 feet per mile, between Páth and Jalálabad. The inclination is slightly towards the east, but the canal keeps to the ridge at Jáni khurd southwards. The land at Jáni khurd is 45·9 feet above the Hindan, and 3·3 feet above the Chhoiya, at a point two miles from its head. At Jalálabad the canal runs at a level 47·5 feet above the Hindan, and 24·6 feet above the Chhoiya, the average level throughout being 43 feet above the Hindan, 16 feet above the Chhoiya, and 32 feet above the East Káli Nadi. At Jáni khurd an escape leads into the Hindan with a waterway of sixty feet, divided into ten sluices of six feet each, similar to that leading into the West Káli Nadi. The distance from the canal to the Hindan, at the point where the escape is built, is five miles, and the bed of the canal is here 38·06 feet above the bed of the Hindan.

From Jalálabad the curve commencing at Siwal khás terminates at Dásna, from whence the course is straight up to the 120th mile. The course from its nearest approach to the Hindan at Dhaulari takes a bend to the east, until close below Sikandarabad, in the Bulandshahr district, the canal is only two miles from the East Káli river. Throughout this line the canal is bounded on the east by the Chhoiya and Káli, and on the west by the Hindan. The slope of surface on this section of the canal is 33·3 feet, or 1·6 foot per mile. The width of the Duáb through which it flows may be estimated on an average at 26 miles, including the land cut off by the Chhoiya on the east and the *khádir* lands of the Hindan on the west. The maximum elevation of the canal near the village of Galand is 40·7 feet above the Hindan and 15·5 feet above the Chhoiya. Near the 110th mile, at the village of Dehra, the Bulandshahr branch leaves the canal on the right bank (see BULANDSHAHR DISTRICT.) The irrigation from the main branch of the canal throughout the district is

very complete. Rajbahas or distributaries are spread in a regular network over the country. To the west of the canal is found the right main rajbaha, which enters this district near Aurangnagar in parganah Sardhana, and after throwing off various tributary rajbahas, reaches the neighbourhood of Dásna, where its waters may either run off into the Hindan by the Sadrpur escape or go to feed the Dehra rajbaha. On the east side of the canal is the left main rajbaha (N), which, after throwing off numerous channels, loses its name near Meerut, and becomes a feeder of many large and some small courses in that neighbourhood. From the Bhola falls is another channel called the left main rajbaha (S), which serves as a feeder for all the large rajbahas irrigating the country on the left, and is carried on far beyond the boundaries of this district, in close proximity to the canal and the East Káli Nadi, past Pabásu of the Bulandshahr district, into the Aligarh district. At present there are no new rajbahas in course of construction, nor are any new ones contemplated.

The principal works on the Ganges canal in this district are the falls and works on the canal. works at Saláwa, with a waterway of 150 feet, the Abu escape works for the Faridpur cut, and bridges at Atarna, Sardhana, Nánu, Játapura, and Púth. Further south are the falls and works at Bhola, the Jáni khurd escape into the Hindan, and bridges at Jáni khurd, Nagla Newári, Saunda, Didauli, and Murádnagar. Below these are the falls and works at Dásna, the great works of the Bulandshahr branch at Dehra, and bridges at Núrpur, Pípalheri, Rauli, and Nidhauli. Mills are attached to the waste channels of the falls at Saláwa, Bhola, and Dásna but, as yet, very little of the full power in existence is availed of. It is proposed to erect sugarcane crushing mills at these places, and whenever the existing flour-mills require repairs they are to be improved by raising the level of the mill room above the water level and by introducing a better motor power. The entire course of the main line in this district is 52 miles.

The Anúpshahr branch of the canal leaves the main stream a little below Anúpshahr branch. Jauli in the Muzaffarnagar district, and at the twelfth mile from its head enters this district at the village of Mírpur in the north of parganah Hastinápur. It runs in a southerly direction slightly inclined to the east into the Bulandshahr district. The work has not been completed according to the original design beyond Kithor, but irrigation even now is carried on from it far into the Hápur tahsil. On both sides, rajbahas have been made, but after the experience gained in constructing and working the main line, main branch rajbahas have not been attempted. There is no navigation on this branch, nor on the small portion of the Bulandshahr branch that runs through this district.

The Eastern Jumna canal enters the district at the village of Kakripur in parganah Chhaprauli, and leaves the district by a cut into the Jumna in parganah Loni of this district. The water of the canal is considered to be far superior for cultivation to that of the Ganges

canal. No damage has yet been caused in this district by the efflorescence of *rich* along its banks nor by the accumulation of silt on the lands watered by it. There is no navigation except for small crossing boats. There are bridges at Kakripur, Rumala, Banil, Bauli, Rustampur, Baraut, Patera, Idrisipur, Aláwalpur, Kayámpur, Kheri, Basodha, Daul, Pahlálpur, Sayyidpur kalán, Rawa, Mubárikpur, Rataul, Bádsháhpur, Saroli, Sikráni, Gokalpur, Baharpur, Auldánpur, and Salsampur, and mills at Shuklpura and Salsampur. The Eastern Jumna canal irrigates from the main line parganahs Ohhaprauli, Kutána, Bágpát, Baraut and Loni, and by means of distributaries Barnáwa is supplied with water.

The navigation on the Ganges canal has considerably fallen off during late years, and, since the opening of the railway, freight has fallen from Rs. 75 to Rs. 15 or 20 per 100 maunds for the conveyance of goods from Rúrki to Cawnpore. Boats of 300 maunds burden can go up the canal. The average depth of water is $5\frac{1}{2}$ feet, the depth of the cutting being about 12 feet. The principal gháts are at Sardhana, Nánu, Murádnagar, and Bahla or Bhola. The principal articles of transport on the canal are, now, cotton and wood, the former because the danger of fire is reduced and because the cotton is taken down by weight and not by dimension of bales, as on the railway; the latter because the canal head is conveniently situated near the forests in the neighbourhood of Hardwár. The rate for each boat on the canal is now four and a half rupees a month. The following statement shows the traffic on the Ganges canal in the Meerut district for 1870-71. The quantities are expressed in maunds, except bambus and timber, which are given in numbers:—

Name of article.	Sardhana.			Nanu.				Bahla.				Murádnagar.			
	1870.		1871.	1870.		1871.		1870.		1871.		1870.		1871.	
	Export.	Import.		Export.	Import.	Export.	Import.	Export.	Import.	Export.	Import.	Export.	Import.	Export.	Import.
Wheat, ..	20,064	300	...	3,851	...	275	313	...	700	400	187	...	...	...	...
Gram, ...	85	...	1,325	...	100	...	6,910	...	1,058	...	2,000	...	...	...	7,895
Urd, ...	3,180	236	...	570	256	...	623	...	...	490	...	...	...	175	...
Other grains, ..	340	175	1,194	115	...	191	945	...	28	590	200	...	185	...	410
Cotton, ...	2,088	625	...	45,407	114	24,339	...	2,378	...	2,385	...	1,164	...	1,267	...
Salt, ...	321	...	...	12	...	213	365	...	50	...	...	2,030	...	5,838	...
Sugar, ...	3,518	5,257	...	2,285	...	1,783	...	1,930	...	1,641	...	...	...	...	...
Linseed, ...	...	...	...	...	...	2,200	...	...	210	...	100	...	...	3,089	...
Bambus, ...	200	4,460	...	123,736	490,668	167,745	1,719,368	...	...	...	...	...	...	...	...
Timber, ...	...	...	...	10,447	4,452	11,000	11,281	...	...	...	...	...	...	...	...
Firewood, ...	...	1,500	...	...	3,795	...	...	...	...	...	...	...	...	...	...
Miscellaneous, ..	1,770	71	...	2,606	3,680	6,612	624	...	...	300	440	800	60	...	152
Total Maunds	31,305	8,164	2,619	55,335	7,844	89,334	9,157	4,338	2,914	6,470	3,370	8,600	235	10,059	8,557
Number, ...	200	4,460	...	134,182	495,140	178,805	1,739,644	...	...	...	...	...	...	...	...

In parganah Loni there are four jhils:—the Gházipur, which is 60×200 Jhils. yards and two feet deep; the Kotla, 72×963 yards and feet deep; the Makanpur, $207 \times 3,200$ yards and three feet deep, and the Gharaunda Nimka, 66×903 yards and three feet deep. There are five jhils in the

¹ See Cautley's Ganges Canal I, 385, for further details.

Meerut parganah, Karauli, Pathānpura, Rāmpur, Pawarti, and Sodhapur. The Karauli jhīl is the largest, but they are all nearly dry in the cold and hot seasons. There are no jhīls in parganahs Chhaprauli, Kutāna, Barant, and Bāgpat. In parganah Dāsna, the Karanpur jhīl is 1,200 × 2,100 yards and three feet deep. This jhīl is one of the class locally known as *duhar*, which may be defined as a lowlying tract of waste land subject to annual inundation, the surface of which has a glossy appearance and is usually covered with small red tufa pebbles. Mattiyala is 900 × 1,200 yards and three feet deep, and is called a *soti*. Parpa is 600 × 1,500 yards and two feet deep, and is called a *duhar*. Hasanpur is 1,020 × 1,200 yards and three feet deep, and is styled a jhīl, apparently because it is covered with water all the year round. Rasūlpur, Sikranda, and Kasalya are known as *sotis*; Sapanvat, Bajhera kalān and Kapūrpur as *duhars*, and the Dhaulāna and Mansūri reservoirs as jhīls. In parganah Jalālabad there are jhīls at Sārna, Khakra, Karampur, Jeori, Basantpur, Bhikanpur, Pasūnda, and Karkar Mandal. There are also numerous artificial excavations for storing water, the principal of which will be noticed under the places where they occur.

The East Indian Railway enters the district to the south from parganah Communications. Railways. Dāhri of Bulandshahr, and after a course of four miles terminates at Ghāziabad, whence it gives off a branch to Dehli. From the Ghāziabad junction, the Panjāb and Dehli line runs on to Meerut, a distance of 27 miles. Twelve miles from Ghāziabad it passes the station of Begamabad in parganah Jalālabad. Two and a half miles north of the Meerut city station is the cantonment station. After leaving the cantonment station the line runs due north to Khātauli in the district of Muzaffarnagar. It has a length of 57 miles altogether in this district. The nearest station to Bāgpat is Dehli, a distance of 20 miles; the Meerut cantonment station is nearest the town of Sardhana; Hāpur is twelve miles from Begamabad, and Sarāwa about eight miles from the same station.

The following roads are under the charge of the provincial public works' Roads. officials in the district, viz., ten first-class raised, bridged and metalled roads; twelve second-class raised and bridged, but not metalled roads and four third-class country roads, besides village cart-tracks and bridle-paths. The first-class roads are as follows:—

	Miles.	Feet.		Miles.	Feet.
Grand Trunk Road, Meerut,			Meerut by Nānu to Shāmli, 17	1,825	
to boundary of Bulandshahr			„ to Dehli, ... 30	0	
district, ... 29	0		Ghāziabad to Hāpur, ... 22	4,600	
Aligarh by Ghāziabad to			Hāpur to Garhmuktesar, 20	0	
Dehli, ... 15	0		Meerut to Bijnaur, ... 7	1,000	
Meerut to Bārki, ... 16	2,200		„ to Bāgpat, ... 11	2,700	
„ to Garhmuktesar, ... 27	0				

The Grand Trunk Road from Bulandshahr passes through Hapur and Kharokoda, where there are encamping-grounds at the 372nd and 379th miles from Allahabad respectively. The road from Aligarh to Dehli passes through Ghaziabad, where there is an encamping-ground, and about one mile onwards crosses the Hindan by an iron bridge, and after another mile meets the Dehli and Meerut road. The metalled road to Rurki passes through Palra, Daurala, Dadri and Dondri into the Muzaffarnagar district. The Garhmuktesar road to Moradabad crosses the East Kali Nadi by a suspension bridge at Gokalpur, and has encamping-grounds at Mau Khás (9th mile), Shahjahanpur (17½ mile), Hapur (21st mile), and at Garhmuktesar, where there is also a dak bungalow. There is an encamping-ground at Begamabad on the Dehli road. The second-class roads are as follows :—

	<i>Miles.</i>	<i>Feet.</i>		<i>Miles.</i>	<i>Feet.</i>
1. Jání to Bágpat, ...	20	2,850	7. Meerut to Binauli,...	16	0
2. Meerut to Bijnaur,	19	4,160	8. Baraut to Sardhana,	22	0
3. Bágpat to Baraut, ...	12	3,500	9. Bágpat to Ghaziabad,	22	0
4. Meerut to Parichhatgarh,	26	0	10. Loni to Sháhdara, ...	5	0
5. Kithor to Mawána Kalán,	17	0	11. Meerut to Sardhana,	10	0
6. Hapur to Begamabad,	27	0	12. Bágpat to Jalálabad,	22	0

The first road is metalled from Meerut to Jání, and is entered so far in the first-class; it crosses the Hindan by a ferry at Baleni. The first seven miles of the Bijnaur road are metalled as far as Muzaffarnagar Saini. The unmetalled portion crosses the Chhoiya nadi by a three-arched bridge near Nagla, and passes thence by Bahsuma and Sadipur to Firozpur. The road to Parichhatgarh passes on to the Kumer-ud-dinnagar ghát on the Ganges. The third-class roads not raised but with occasional culverts and bridges are the Baraut to Tanda road 14 miles; Baraut to Kakripur or Shámli, 11 miles; Sardhana to Dhaula, 23 miles; and Bahsuma to Mawána, 12 miles. Besides these there are good unmetalled roads along the canals. There are altogether 194 miles of first-class metalled roads, 220 miles of second-class roads, and 60 miles of third-class roads in the district, maintained at an average annual cost of Rs. 12, Rs. 8, and Rs. 5 per mile respectively. The Dehli road by Ghaziabad, the Aligarh road by Hapur, the Karnál road (43 miles), the Rurki road (12 miles), the Garhmuktesar road (32 miles), and the commencement of the Bulandshahr road were all constructed during the incumbency of Mr. T. C. Plowden about 1840.

The vicinity of the mountains and the comparatively high latitude and considerable elevation render this one of the healthiest parts of the plains of India. The weather for five months, from November to March, is delightfully cool and invigorating. The prevailing winds are westerly and northerly. In January a light hoar frost is frequently found in the early morning, and through December and January

ice is made by the ordinary plan of laying out shallow earthen pans, and in chill nights these become covered with thin laminæ of ice, which are subsequently stored in pits. In April the hot westerly winds commence. They make the atmosphere sultry, but are not at all injurious to health and never produce the weariness felt during the rains. In the latter part of June, but frequently not until the beginning of July, the rains commence, and, with slight intermission, last till the middle of September. This month is the most unhealthy of the year, being always hot and exhausting. In October, though the days are very hot, the nights become cool and pleasant. Rain sometimes falls in this district in considerable quantities in the latter part of December and the early part of January, and in unirrigated land is the saving of the spring crop.

The average total rainfall for the whole district for a series of years is shown in the following table :—

Year.	Inches.	Year.	Inches.
1844-45,	30.93	1862-63,	31.4
1845-46,	26.89	1863-64,	25.1
1846-47,	34.82	1864-65,	19.6
1847-48,	34.54	1865-66,	19.6
1848-49,	21.36	1866-67,	26.6
1849-50,	37.96	1867-68,	29.6
1850-51,	21.97	1868-69,	17.3
1851-52,	18.90	1869-70,	17.8
1852-53,	20.40	1870-71,	35.7
186-62,	27.00	1871-72,	34.5

The average for the nine years 1844-45 to 1852-53 was 27.53 inches, and the average over the Meerut Division was 35.82 inches. The average over the whole division in 1860-61 was 12.2 inches, and in 1865-66 was 29.6 inches; during 1869-70 the district fall was 17.8 inches. The high average of the rainfall of this division is due to the heavy rains prevalent in the Dehra Dûn and the northern portion of Sahâranpur.

The following table gives the total rainfall at the principal stations of the district for the years 1844-45 to 1849-50, from returns existing among the records of the Board of Revenue :—

Name of station.	1844-45.	1845-46.	1846-47.	1847-48.	1848-49.	1849-50.	Average.
Meerut city, ...	28.92	24.10	31.61	40.55	17.75	38.08	30.17
Sardhana, ...	35.04	24.63	57.48	48.28	19.30	39.58	37.39
Baraut, ...	28.86	24.63	22.46	41.53	19.57	33.37	30.55
Hâpur, ...	30.79	34.06	31.54	34.48	15.41	52.62	31.15
Bâgpat, ...	14.45	21.90	23.18	30.07	14.97	20.38	22.49
Dâzna, ...	38	29.67	32.31	31.98	19.53	42.13	32.27

The accompanying scientific details have been obtained from the officers charged with the meteorological observations in the district. The first table gives the monthly mean temperature in the shade for each month and the mean monthly range. The second and third tables give the monthly readings in detail for two years, 1869 being a year of unusual heat, and 1870 being an average year, with a fair amount of rain. The observations were taken at 4 A. M., 10 A. M., 4 P. M., and 10 P. M. :—

			January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual mean.
1870, ...	Mean,	...	...	66	72	81	92	90	86	85	84	79	67	60	79
	Range,	...	...	31	29	33	32	21	14	16	18	31	38	31	
1871, ...	Mean,	...	...	57	67	73	82	86	87	84	85	79	69	59	76
	Range,	...	...	27	26	35	33	24	18	15	20	34	34	28	
1872, ...	Mean,	...	...	57	61	74	82	90	92	86	83	76	68	61	76
	Range,	...	...	21	26	33	31	32	23	15	17	19	32	31	
1873, ...	Mean,	...	...	59	66	75	86	87	86	85	82	75	66	58	77
	Range,	...	...	29	31	33	37	28	29	16	18	31	33	30	
1874, ...	Mean,	...	...	64.7	69.4	68.2	84.2	91.1	87.1	83.9	83.5	82.0	76.4	64.5	74.7
	Range,	...	...	27.7	28.0	28.2	34.9	30.2	18.2	12.0	13.0	18.0	32.2	35.4	

Mean Monthly Readings of the Meteorological Instruments at Meerut for the year 1869.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual mean.
Barometers, ...	29.833	29.230	29.091	28.981	28.787	28.653	28.721	28.781	28.835	28.926	29.211	29.206	28.93
Dry bulb, ...	47	53.7	61.4	70	83.7	89.4	82.2	81.6	80	83.5	82.4	78.8	69.1
Wet bulb, ...	43	49.2	56.7	63.3	67.5	74	77.2	77	76.1	81.2	77.7	74.5	61.2
Dew point, ...	38.3	45.4	53.4	58.1	68.4	67.3	75.4	75.3	74.4	80.1	82.8	86.8	59.6
Elastic force of vapour, ...	.241	.307	.412	.341	.605	.686	.880	.878	.850	.812	.728	.750	51.5
Humidity, ...	87	74.7	75.8	47.6	44.2	53	80.2	81	79.9	79.8	70.7	71.1	68.2
Barometer, ...	29.301	28.250	28.150	28.042	28.855	28.720	28.769	28.829	28.915	29.190	29.197	29.197	28.96
Dry bulb, ...	60	66.6	75	90.7	102.3	99	90	90	90	90	90	90	81.4
Wet bulb, ...	51	60.2	68	66.1	75.4	77.8	80.2	80.2	80.2	80.2	80.2	80.2	67.4
Dew point, ...	43.2	49.2	55.5	47.1	83.0	68.9	76.3	76.3	76.3	76.3	76.3	76.3	59.3
Elastic force of vapour, ...	.293	.333	.440	.351	.602	.721	.913	.924	.893	.819	.811	.801	53.6
Humidity, ...	63	53	63.5	24.6	28.0	39	61.3	69	67.1	55.6	46	50	50.6
Barometer, ...	28.639	28.700	28.829	28.915	29.190	29.197	29.197	29.197	29.197	29.197	29.197	29.197	28.96
Dry bulb, ...	94.8	93.9	91.7	85.8	76.6	70.8	83.5	83.5	83.5	83.5	83.5	83.5	83.5
Wet bulb, ...	80	80.3	79.4	69.3	69.5	56.1	69.8	69.8	69.8	69.8	69.8	69.8	69.8
Dew point, ...	75.5	76.7	75.5	60.1	43.5	56.9	75.5	75.5	75.5	75.5	75.5	75.5	56.9
Elastic force of vapour, ...	.300	.289	.393	.297	.511	.626	.890	.891	.891	.891	.891	.891	62.0
Humidity, ...	41	30.7	37.1	14.4	18.4	25	55.5	54	63	43.4	33.8	39.7	39.2
Barometer, ...	29.341	28.222	28.110	28.011	28.785	28.651	28.721	28.781	28.835	28.926	29.211	29.206	28.93
Dry bulb, ...	53	60.2	69.9	78.9	91.8	94.1	80.2	80.2	80.2	80.2	80.2	80.2	73.8
Wet bulb, ...	47	52.7	59.7	61	70.5	75.2	75.2	75.2	75.2	75.2	75.2	75.2	63.9
Dew point, ...	41.6	47.3	53.9	48.8	68.1	60.7	89.3	89.3	89.3	89.3	89.3	89.3	57.3
Elastic force of vapour, ...	.277	.329	.421	.350	.517	.678	.893	.893	.893	.893	.893	.893	58.3
Humidity, ...	64	66	63.8	34.3	34.0	42.9	74.4	75	75	69.2	60.2	69.5	60.9
Maxima in sun's rays, ...	120	182.1	137.3	165	160.5	154	142	147	159	139.7	131.6	124.1	140
Maxima on grass, ...	34.3	30.3	41.6	49.7	65.1	71.2	85.6	86.7	81.7	89	81.9	74.9	50.2
Maxima in shade, ...	73.5	77.8	83.4	89.9	111.8	108	95.6	96.7	91.7	99	91.9	74.9	90.4
Minima in shade, ...	44.9	47.3	57.9	66.2	81.3	86.6	80.5	79.7	77.6	64.3	49.6	45.8	65.1
Mean of the maxima and minima in shade, ...	59.2	62.3	70.6	83.5	96.4	97.3	89.5	88.2	84.6	79.6	68.7	66.3	77.8

Mean Monthly Readings of the Meteorological Instruments at Meerut for the year 1870.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual mean.
Barometer, ...	29.179	29.122	29.040	28.955	28.761	28.730	28.683	28.781	28.891	28.939	29.186	29.141	28.96
Dry bulb, ...	45.0	53.7	61.0	67.4	73.8	83.2	80.9	75.2	70.2	67.1	62.5	48.2	60.2
Wet bulb, ...	40.6	48.2	55.7	58.9	61.7	72.8	79.3	70.1	73.8	62.8	47.4	43.7	60.2
Dew point, ...	33.8	42.6	51.1	58.3	64.2	65.1	77.4	75.0	72.0	60.3	42.2	38.5	55.7
Elastic force of vapour, ...	.185	.280	.386	.402	.445	.609	.943	.870	.811	.630	.273	.239	50.0
Humidity, ...	63.1	67.9	60.5	60.5	44.9	64.3	89.2	87	80.4	70.6	69	70.6	71.2
Barometer, ...	29.236	29.185	29.116	29.028	28.830	28.803	28.735	28.809	28.909	29.000	29.105	29.013	29.02
Dry bulb, ...	53.8	68.3	75.1	86.2	97.5	92.4	86.5	86.5	88.6	88.6	78.5	70.7	79.5
Wet bulb, ...	49.1	56.6	62.4	68.0	70.9	77	80.8	79.0	79.0	79.0	79.0	79.0	66.8
Dew point, ...	39.0	46.5	54.1	54.9	66.0	70.6	79.0	79.0	79.0	79.0	79.0	79.0	59.1
Elastic force of vapour, ...	.242	.330	.427	.439	.476	.757	.981	.941	.869	.612	.349	.292	56.0
Humidity, ...	48.7	48.4	49.8	50.2	50.7	54.1	78	78.2	71.2	61.4	45.8	59.0	53.4
Barometer, ...	29.004	29.004	29.004	29.004	29.004	29.004	29.004	29.004	29.004	29.004	29.004	29.004	29.004
Dry bulb, ...	80.6	80.7	80.6	80.6	80.6	80.6	80.6	80.6	80.6	80.6	80.6	80.6	80.6
Wet bulb, ...	81.9	80.0	79.3	70.7	61.1	56.2	49.8	43.9	38.5	30.1	20.1	14.0	57.6
Dew point, ...	79.1	77.6	74.4	61.0	48.7	43.9	38.5	30.1	20.1	14.0	10.0	5.0	54.6
Elastic force of vapour, ...	.097	.097	.097	.097	.097	.097	.097	.097	.097	.097	.097	.097	.097
Humidity, ...	30.3	31.7	37.2	36.1	21.3	45.8	70.1	60.2	42.5	36.3	4.0	42.8	42.8
Barometer, ...	29.186	29.141	29.050	28.971	28.775	28.738	28.675	28.780	28.903	29.042	29.205	29.257	28.98
Dry bulb, ...	52.0	60.6	60.9	74.8	86.1	67.2	63.5	81.5	78.9	71.8	57.8	53.8	71.2
Wet bulb, ...	45.1	52.3	50.3	62.4	67.3	74.7	80.1	78.1	75.9	65.7	51.3	43.1	63.3
Dew point, ...	37.3	44.7	54.1	51.5	50.3	68.2	79.2	70.8	74.7	62.3	43.0	42.3	58.1
Elastic force of vapour, ...	.224	.302	.426	.432	.468	.789	.902	.823	.671	.571	.300	.275	54.9
Humidity, ...	58	57.3	65	50.6	37.3	59.3	86.5	35.0	87.0	72.8	64.1	60.1	65.9
Maxima in sun's rays, ...	124.8	131.2	142.4	150.7	157.8	147.9	137	143.8	140.1	143.1	132.2	120.3	14.0
Maxima in shade, ...	74.8	81.5	86.9	97.6	107.7	100.6	93.1	92.6	92.1	84.7	83.0	75.4	90.2
Minima in shade, ...	42	50	58.1	61.8	75.7	80.3	78.0	77.4	74.1	64.4	48.0	41.0	63.2
Mean of the maxima and minima in shade, ...	58	65.9	72.5	80.9	91.7	90.4	85.8	85.6	83.1	79.5	67.0	50.7	75.7

PART II.

PRODUCTIONS OF THE DISTRICT.

The wild animals found in the district are the antelope, fox, porcupine, wild pig, jackal, wolf, hare, monkey, and *biju* or grave-digger. The usual rewards are paid for the destruction of wolves, which are somewhat numerous in the ravine tracts along the Ganges. The birds are much the same as those found in the neighbouring districts. The sand grouse (*bhat titar*) occurs near Ghaziabad, Mansuri in parganah Dásna, and Pabli khas in parganah Meerut. There are also quail, partridge, green pigeons, and all kinds of geese and wild ducks in the winter on the numerous jhils. The local names of the snakes found in the district are as follow :—

Asgar tapra, about four feet long, of a dust colour, with white lips; this species is said to be very venomous. *Shashker tapra* above of a dirty slate colour, with dirty white lips, and the body dirty yellow. The *phasi tapra* is nearly of an equal thickness throughout; the colour is a

dull brown with a few black spots and white rings : it is about two feet long, and is considered venomous. The *telija kumudi* is a black variety with a round white head, and very venomous : about eighteen inches long. The *kátha kumudi* is smaller, of an almond colour, with white spots on the back ; it appears during the rains. The *káusra harundi* is of a dirty reddish black colour, with black and white spots on the back, and about ten inches in length. This and the *tápiya kumudi* are considered poisonous. Other species of snakes recognized under separate names by the natives of Meerut are the *pás raundi*, *shainkál*, *tirná*, *bainsra*, *haldiya bish*, *rúma bish*, *siyáh bish*, *haldiya kumus*, *basithwara*, *kauna*, *haldiya palak*, *siyáhpalak*, *látra palak*, *puriya palak*, *kingar*, *jewan shá*, *haum tiliya*, *kál kant*, *phálpátáur*, *hal liya raj bish*, *diidhiya raj bish*, *támba bansi*, *pháliya bansi*, *kukhur*, *gai rewas*, *singchor*, and *telija tapra*.¹ It would be of little practical use to give the native descriptions of these snakes, and the list is given here more as a guide to the idea prevalent of the number of species to be found in the district than as a contribution to its ophiology. There is a considerable trade in the skins of domestic cattle between the upper Duáb and Cawnpore. The deaths registered from snake-bites and attacks of wild animals during 1869 were 25 males and 34 females, during 1872 were 20 males and 19 females, and during 1873 were 22 males and 12 females.

As yet there are no particular breeds of horned cattle in this district. The better class of zamíndárs who take an interest in the breeding of cattle have of late years been importing bulls from Hissár, and in some villages the sharers have subscribed among themselves and purchased Hissár bulls, the expenses of which are borne by the village. Doubtless, in course of time, the Brahmani bulls (*bijár*) will be discarded and no longer allowed to perpetuate the present dwarfish breed. The Mysore bullocks are seldom found here. The common country bullock is ordinarily used for agricultural purposes, and its price varies from Rs. 15 to Rs. 70 ; buffaloes are more rarely used. Their cost is from Rs. 20 to Rs. 50. A cow varies in price from Rs. 15 to Rs. 25 ; a sheep from Rs. 1-8 to Rs. 4 ; and a country goat from twelve annas to Rs. 4. The best buffaloes do not give more than six sers of milk a day, and cows on an average not more than two ; the best milking cows are fed on *khál* (refuse of a mustard oil mill), *chari* (young joar), *bláusa* (or chaff), and *binaula* (cotton seed).

The breed of horses has wonderfully improved during the last fifteen years. Several zamíndárs have fine horses by Arab stallions out of Kátha mares and by the stallions of the Government Hápur Stud out of country-bred mares. The average price of the former is Rs. 250 and of the latter Rs. 300. The common country-bred mare is worth from Rs. 130 to Rs. 150. The *tattú* (or country pony) is usually a strong

¹ From a note by H. M. Rogers, C. S.

serviceable little animal, and seldom fetches more than Rs. 50 or 60 and some can be bought for as little as Rs. 15. Mares served by the stud stallions are registered, and after ten months have elapsed from the birth of the colts, the young animals are examined by the stud officers, and if they are approved of, the Government takes them at a price not exceeding Rs. 110 for each colt, and if not approved of the zamíndár keeps them : hence a superior breed of small horses has gradually spread throughout the district. In this district potters (Kumhárs) are the only people who rear donkeys, all of which are of a miserable description. And most of them are deformed, owing to the fact that they are worked from a very early age. The average price of a donkey is Rs. 10 to Rs. 15. A stallion donkey of good breed has lately been introduced into this district by Government. Mules are increasing in numbers, and vary in price from Rs. 25 to Rs. 40. As yet no schemes have been adopted for improving the breed of sheep, which are all small and poor ; like goats they are reared and looked after by the Garariya caste. When sold by the score goats sell for Rs. 40 and sheep at about Rs. 25 a score.

Fish usually spawn in Baisákh and Jeth, and the young fry appear in Asárh.

Fish.

The following are caught in all the great rivers and canals :

The *anwári*, *rohu*, *maháser*, *mahi*, *pargas*, *bhúr*, *silenda*, *tipri*, *tengra*, *biehhwa*, *clawar*, *galdeb*, *sauli*, *síl*, *chahya*, *chahod*, *kalbús*, *mola*, *barhiya*, *ár*, *kurwa*, *bám*, *genchi*, *galwa*, *phula*, *bhiyun*, *chila*, *maghura*, *puncha*, *rori*, *khajwa*, *wadar*, *saktiyan*, *jhinga*, *bhakra*, *cháhiya*, &c. The same fish are found in the Ganges canal as in the Ganges, and except the larger fish, the Eastern Jumna canal has nearly the same species as the Jumna river. In this district little (if any) oil is extracted from fish. The fishermen are mostly Shaikhs and Bilúchis ; with a few Kahárs, Kolís, and Khatíks. There are about 220 in the whole district, of whom more than half work as labourers as well as fishermen. The greater number of regular fishermen live in the Meerut tahsil. There are four modes of catching fish common in the district : by the *tappá* (or bottomless basket), the *jál* (or net), the *shisht* or *shist* or rod, and by forming dams (*bund*). Large quantities of fish are caught at all seasons of the year except the rains, when they are said to be impure and are little sought after. The Káli Nadi produces large quantities of *jhinga* and *giroi*. The *maghura* is generally found in stagnant water, and rarely in a running stream. Fish are very largely consumed for food by most classes except the Jains, or as they are usually called in this district Saraugís. The average price of good fish such as *rohu*, *kalbús*, &c., is from one and a half to two annas a ser. The most expensive are *maghura*, which fetch from three to four annas a ser, and *anwári*, which is usually sold at eight annas. The cheapest fish are the *ár* and *silenda* ; these are largely consumed by the lower classes, and are sold at from a quarter to one anna per ser. A small fish called *bhúr* is largely consumed by the same class.

The rain-crops (*kharif*) grown in the district are Indian-corn, here called *makai*; *joár* (*Sorghum vulgare*); *bádra* (*Penicillaria spicata*); *urá* (*Phaseolus Roxburghii*); *moth* (*Phaseolus aconitifolius*); *gawár* (*Cyamopsis psoraleoides*); cotton; sugar-cane; rice; *munji*, a small grained variety of rice; *múng* (*Phaseolus mungo*); *lobiya* (*Vigna sinensis*); *til* (*Sesamum Indicum*); *kangni* (*Setaria Italica*); *manduwa* (*Eleusine corocana*); *sánwán* (*Oplismenus frumentaceus*) *sánwak* (*Oplismenus colonus*); *pusthi*, a species of wild rice; *thor* or *thuhur* (*Cajanus Indicus* Var.); *sani* (*Crotalaria juncea*); and *san* (*Hibiscus cannabinus*). The principal staple crop amongst these is undoubtedly sugar-cane.

The *rabi* (or cold-weather) crop comprises wheat, barley, gram, peas, *kásum*, or safflower, *toriya*, *sarson* and *tára*, species of mustard grown for the oil expressed from the seeds; *arhar* (*Cajanus Indicus*); *chaina* (*Panicum miliaceum*); *jai* or oats; tobacco; melons; indigo; *chahora*, a kind of rice; *masina* or linseed; *paunda*, or the thick sugar-cane, grown for eating, *singhára* or water-caltrop; *shalgam* or turnips; *gájar* or carrots; *kahpús*, a kind of rice; aniseed; fenugreek; lentils; roses for rose-water; *ker*; *karela*; potatoes; red-pepper and other garden produce. *Bathúa* (*Chenopodium album*) is found in considerable quantities, as well as *dib* grass, and the cultivation of lucerne for fodder has come into extensive use near Gháziabad. Some hundreds of *Kahárs* obtain a livelihood by digging up the roots of the *khas-khas*, used for *tattis* in the hot-weather, cutting grass for matting and thatching, and cultivating *múnj* in the Ganges *khádir* for its *sirki*, matting and ropes. The grasses used for thatching are locally known as *múnj*, *boriya*, *pála*, and *sentha*. I shall now proceed to give a detailed account of the mode of agriculture and the treatment of the several crops, which will serve as a guide to the practice of husbandry in the entire upper Duáb.

There is, generally speaking, no absolute rotation of crops practised in this district, though practically some system obtains which is as near an approach to a rotation of crops as can be expected in the present state of agriculture. Generally, if the land be irrigated, one-third of a cultivator's holding is allowed by him to lie fallow for one *fasl* or season in the year, but if the land be *baráni* or unirrigated, only one crop is annually produced, and during the other season the land is allowed to lie fallow. Land that was cultivated in the preceding *rabi* is called, when lying fallow in the *kharif*, "*jaundl*;" and fallow land that was cultivated for the preceding *kharif* is called "*polcha*." Starting with an irrigated plot, and with wheat as the first crop for the *rabi* or spring harvest, the *kharif* crop will be *joár* (maize) or *bádra* with *channa* (gram) for the next *rabi*, and in the *kharif*, cotton will be cultivated. During the ensuing *rabi* the land will lie fallow. In the *kharif* sugar cane will be grown; in the following *rabi* the land will lie fallow, and *chari*

for fodder will be grown in the *khariḥ*, and after a wheat *rabi*, cotton will be again cultivated in the *khariḥ*. Then after a fallow *rabi*, sugar cane will be again grown for the *khariḥ*. In *dākar* land the rotation is little: where there is plenty of irrigation the *rabi* will bear gram, and in the *khariḥ* rice, and every three years the land during one *fisl* at least must lie fallow. Where irrigation is scanty the land will only bear one gram or one rice crop annually. There is a peculiarity in laying lands fallow in this part of the Dab. For half the fallow season the land is said to be *pari*, i. e., it remains just as it was after the preceding crop was cut, but when half the season has elapsed, the land is ploughed usually in two ploughings, and therefore for the second half of the fallow season it is called *bāhun*. In some villages, after the fallow succeeding the sugar cane crop, wheat is almost invariably grown.

Manure termed *kūḍi* and *kūḍi khiri* is very extensively used in this district.

Manure. This manure is generally stable refuse, cow-dung, ashes, and the like. No use is made of the bones of dead cattle which are found lying about in such numbers near every village site, and it is feared that Hindu prejudice will never permit the use of this valuable manure. It is only near towns that manure is ever purchased. In villages there is usually as much as is required; for every co-partner in an estate is entitled to the refuse pile of all his own raiyats as Chamárs, sweepers, and field labourers generally. For sugar cane 120 maunds of manure is required per acre, worth Rs. 5; for cotton 60 maunds, valued at half that amount; for Indian-corn 90 maunds; for tobacco and potatoes 180 maunds each, and for onions and melons, 120 maunds. These crops are the only ones for which manure is considered necessary.

Mr. Guthrie, writing in 1807 regarding the Sahāranpur district, which comprised the present districts of Meerut, Sahāranpur, Muzaffarnagar and a part of Bulandshahr, says, "it is estimated that 22,000 bighas are under sugar cane cultivation; thus this cultivation is already considerable, and that it is not increased to a far greater extent is solely owing to the indigence of the cultivators; nor does the cane which is now produced yield all the advantage of which it is capable, being for the most part made into *gūr* and exported to Jaipur and other trans-Jumna States; very little indeed is refined and manufactured into sugar. Indigo is not cultivated to any extent here." Cotton is spoken of in the same strain. A reference to the statistics given under "*Irrigation*" will show the enormous increase in the cultivation of these superior crops in canal-irrigated land; and in well-irrigated land the contrast is quite as striking. The cane that was most generally grown in 1807 is now everywhere considered the most inferior of all the four sorts cultivated in this district. The chief articles of produce in Mr. Guthrie's time were wheat, gram, rice and barley. These grains are

much more largely cultivated than formerly, while the decrease in inferior grain is very considerable. Another crop now largely cultivated is potatoes. Mr. Dumbleton, Collector, writing in 1809, says:—"I have not been able to prevail on any zamindár to undertake the cultivation of potatoes in any of the parganahs of this district; never having seen the plant, and unacquainted entirely with its use, they have declined entering into a speculation the advantages of which are hitherto unknown in this part of the country. No seed potatoes are procurable at Meerut or at any place nearer than Fatehgarh." The increase of cotton and other cultivation has not been followed by a decrease of food grains, and the increase in non-cereal crops has been more than balanced by the increase in the cultivated area, extended irrigation, and higher farming.

The amount of capital represented by the implements and cattle necessary for an average holding is about Rs. 200, but among these are included many instruments which are held in partnership. Exclusive of bullocks, which are very frequently hired at three annas a day, the implements and tools required to cultivate the amount of land a plough can till are worth from Rs. 15 to Rs. 20. The principal implements used in husbandry are (1) the *hal* or plough, which with its component parts cost about Rs. 3. These are the *halas* or beam; the *tindi* or *hatheli*, the handle or still; the *páthá* or *parotha*, which is generally at the end, shod with an iron share called *phálá*. The *hal* is the body of the plough, the main piece into which the *halas* and *páthá* are joined. The *wag*, called also *pachhar*, is a peg or wedge which fixes the *halas* firmly into the *hal*. The wedge which fixes in the *páthá* is called the *pachhila*. (See further, under Muzaffarnagar.)

Ikh (or sugar cane) is sown in good soil and must have irrigation except in the *khádir*, where the natural moisture is sufficient. It is sown from Phálgun to the end of Chait, and is cut in Pús and Mágh. The ground requires 15 or 16 ploughings and about 25 maunds of manure per kuchcha bigha. The crop is injured by a worm called a *kanswa*, which usually, if at all, appears while the *ikh* is in its infancy. After the plant is affected by this worm it ceases to grow and gradually dries up. A second worm, known as *sildá*, injures the crop just as it is ripening, and the result first appears in the wavy leaves at the top (*agaula*). Sometimes a stray branch springs out from the bottom (*karanjwa*) and destroys it both in the early period of its growth, and later on, when it is known as *kanas*. The growth of these sprouts may generally be prevented by tying ten or twelve canes together at a cost of about eight annas per kuchcha bigha. The cane, like the bambu, occasionally flowers, and then it is useless for pressing. The day after the *Diwáli* the first fruits of the cane are gathered and enjoyed at a feast. *Ráb* and *gúr* are the names of the first form that the cane-juice takes after

boiling. *Ráb* is the substance from which nearly all the preparations of sugar are manufactured: *gúr* is used as it stands by tobaccoists, confectioners, and as a condiment by all classes. The difference in the preparation of the two substances is that *gúr* is boiled longer, so that on cooling it admits of being beaten up into round balls or *bhells* weighing from two to five sers. The molasses that drains from the *ráb* by pressure and during the purifying process is called *shíra*, and the remaining produce when dried and purified is called *khánd* or dry sugar. This again when further refined becomes *misri*. Vinegar is also made from the juice (*ras*), and the tops of the leaves are used as fodder for cattle. The canes reserved for next sowing are placed in an earthen vessel and stored, but sometimes ratooning (or the leaving of the roots of the cane in the ground until next season) is adopted. These roots are called *moda*.

Sugar cane requires three waterings, which are known as the *palewa*, *kora*, and *akhiri*. The *gúr* and *ráb* are in this district usually prepared by Kabárs or Musalmán Halwáis, and their wages are usually $2\frac{1}{2}$ to $1\frac{1}{2}$ sers per maund; but sometimes cash wages are given. The driver of the sugar-mill is called *pátiya*. The man who puts the chopped cane into the *kolhu* is called *periya*, the man who supplies the *periya* with the cane is called *muthiya*, and the man who chops up the cane is called *gandkat*. The refuse cane after pressing is called *khoi*, and the person who feeds the fire with the dried *khoi* during the boiling process is called *jhonku*. There are four kinds of sugar cane grown in this district: the *bareliya* from Bareilly, the *srenta*, the *dhaul*, and the *jálvi*. The cane when first sprouting is called *pavi* or *poya*, when it begins to throw out little stems it is called *byánt*, and when the cane is one and a half feet high *ikh*. The produce of sugar cane is, *gúr*, per ser 16 pie; *shakr*, 2 annas; *chint*, 5 annas; *khánd*, $4\frac{1}{2}$ annas; *shíra*, 6 pie; *misri*, 8 annas; *batása*, 7; *gindaura*, a large wafer of fine sugar distributed at marriages and funerals, 10 annas; *sabúni* and *gáta*, 8 annas. There are many ceremonies connected with sugar cane cultivation in this district deserving of notice. The first of all is the *pawan parohha*, i. e., seeing in which direction the wind blows. There are two methods of ascertaining this (1) by dropping dust from an eminence, and (2) by elevating a rag on a bambu rod. Until the wind is seen to be favourable the cane is not planted. The bringing out the plough and putting it into the ground to turn over the soil is called *halaita*. Brahmans are always present at the ceremony. (3) When the *ikh* or cane is planted the plough is worshipped with turmeric and rice. This ceremony is called *uhkar* or *okhar*. (4) On the eleventh of the light half of Kárttik (October) the first *ikh* is cut, and around the first bundle a red thread (*haláwa*) is tied. After the ceremony the cane is distributed. (5) The *kolhu* (or sugar-press) is not planted in the earth till the purohit (or family priest) has declared the auspicious moment. (6) On the first day of pressing there is a ceremony called *rasedi*, when the juice of

the sugarcane is passed around. (7) There is a feast when *gúr* is first cooked ; some *gúr* is distributed and some set apart as an offering to the deity. This is called the *faridl*, from a certain Pír Farid Baksh, Shakarganj, a local saint. (8) The last *gúr* prepared is distributed at a feast called the *ikh barhi*.

Experiments have recently been made at Bhola which may have an important influence on the future of sugarcane cultivation in canal-irrigated districts. A set of small horizontal rollers turned by a small over-shot wheel exerting about eight-horse power was erected at the falls, and succeeded in crushing a maund of cane in five minutes. According to Mr. Butt's calculations seven maunds of cane are pressed in the Shahjahánpur district in $4\frac{1}{2}$ hours, or one maund in about 40 minutes ; and in Meerut it takes 24 hours to fill one *kandi* with juice, which was filled by the rough and simple mill at Bhola in 32 minutes. The time, therefore, occupied by the water-mill as compared with the bullock mill is as one to eight, besides the great saving in cattle and manual labour. The Bhola experiment is not yet complete, but all classes are satisfied of the importance of the success already obtained with hastily constructed machinery of imperfect and inexpensive character. Taking the returns of 1874-75, the area under sugarcane irrigated by the canal amounted to 141,662 acres, which yields $7\frac{1}{4}$ million maunds, 260,000 tons of *gúr*, worth about $2\frac{1}{4}$ millions sterling annually. These figures alone show the great importance of the industry, and there can be no doubt that the application of water-power to crushing the cane must " have an important effect on the sugar trade of this part of the country by so lowering the cost of production as to enlarge the area of its movement." The release of labour must tend to higher and more careful cultivation and to a general improvement in the standard of cultivation. Experimental mills are about to be constructed at Bhola, Dásna, and Saláwa in this district, and at Ohitaura in the Muzaffarnagar district.

The Indian-corn (*Zea mays*) crop is sown in Asúrh, usually in *rausli* and *mattiyár* soil, and, as a rule, receives irrigation. After the ground has been ploughed, five or six times, the *maira*, or harrow sometimes called *henga*, is drawn over it. The seed is sown sparsely, one ser sufficing for a *kuchcha bígha*. In four months the crop is ripe. The stalk of the *makai* is called *pahra* ; the ear is called *kukri*. If the crop is likely to be poor the *pahra* is given to cattle while green. When the grain has been beaten out, the empty ear is called *gúli* or *gúliya* : and is used as fuel for fire. If the stalk is sound, the ears are generally stored with it in a thatched pile, and will remain good for a long time. A very favourite food in the villages is a bread made of equal quantities of gram and *makai*. Another favourite dish is pounded *makai* boiled in milk and sweetened with sugar. This is called *daliya*. A worm called *sildí* does much injury to the stalk of *makai*, especially when there has been a severe east wind (*púrwa*), but after the hair (*bál*), called *chanwar*, has once

appeared this worm is seldom seen. In *makai* flour there is no glutinous quality, so people do not knead it, but simply pour a little hot water on and bake it. The ears are frequently roasted by the people and eaten before the grain gets hard. These are called *bhūta* or *bhūnta*. The grain beaten out is usually termed "*nanha-nāj*." This crop is cut in Asauj. The average produce per acre is nine maunds. The cost of production is about Rs. 8, and the value per acre Rs. 12 or Rs. 13.

Joár (*Sorghum vulgare*) is sown in Asárh and is grown in all sorts of land; only one ploughing is required. For grain the seed is sown sparsely: two and a half sers per *kuchcha* bigha. What is sown for *chari* or fodder is usually sown rather early and closely, sometimes in the beginning of Baisákh. The ear of *joár* is called *guphi* or *gupha*. *Joár* is baked and eaten in the same way as *makai*. While *joár* is young an insect called *bhaunra* or *bhaunri* injures the stem if there be a want of rain. This insect is as thin as thread, with a black head and earthy colored body. It is said that if cattle eat *chari* thus infected they soon suffer from severe pain and their bodies become inflated. There is no good remedy for it and the cattle usually die. Sometimes cow-dung ashes are given as a remedy in these cases, and more frequently a paste made of *joár* flour and sour butter-milk. These insects are innocuous to buffaloes only. They perish instantly the rain has fallen, and unless the ear has come out the crop is little injured. If the ear has sprouted before the rain comes the crop is destroyed and nearly valueless. The average produce per acre is from four and a half to five and a half maunds. The expenditure per acre is Rs. 5 or 6, and the value per acre is Rs. 12. From *joár* are made *roti*, *parmal*, and *khil*. Any grain that on being parched (*khil jata*) becomes inflated is in this district called *khil*.

Bájra (*Penicillaria spicata*) is sown in Asárh and cut in Asauj. It is generally cultivated in *bhár* and inferior *rausli* soil. The seed is sown sparsely: about a quarter of a ser per *kuchcha* bigha. The grain is of a heating or blood-giving character, and is chiefly eaten in the cold season. It is frequently used for fomentations for pains. The stalks are used as fodder. The average produce per acre is five maunds to six. The expenditure is about Rs. 3 and the value of the produce about Rs. 7. When the *bájra* stalk (*phatera*) begins to throw out shoots, the villagers say "*kainas phút ati*," and when the ear begins to show itself "*kahiba nazar ata*." The fluffy flower of *bájra* is called *búr* and *búra*. From *bájra* grain are made *roti*, *khichri*, and *darsha* and *khil*.

Urd (*Phaseolus Roxburghii*) is sown in *rausli* or *bhár* soil in Asárh, and is ripe by the end of Kúár or Asauj. Half a ser of seed is sown per *kuchcha* bigha. From the *púrwa* or east wind the stalk becomes afflicted by an insect which produces a disease in the upper

part of it, called *chhipwa*, so called because the leaves become parched up into a scroll and are lost to view nearly. Another name for *úrd* in common use is *másh*. A smaller grain, but very similar to *úrd*, is *úrdi*. A quarter of a ser of this is sown per *kuchcha* bigha. From *úrd dāl* is made *sattu*, *dāl*, *bari*, *bariyan*, *imrati*, *pera*, and at Hapur and Púth pápur.

Moth (*Phaseolus aconitifolius*) is sown in *bhár* lands. It is sown in Sāwan and is ripe in Kārttik. The grain is of a warm character. Too much rain injures it, and artificial irrigation is rarely resorted to. It is usually sown in lines with *jodr*. The average produce per acre is four and a half maunds. The expenditure is Rs. 6, and value per acre Rs. 13. *Gawár* (*Cyamopsis psoraloides*, D. C.) is sown in *dákar* soil, usually about the middle of Asárh, and is ripe by Asauj. While the bean is green it is eaten as a vegetable. When ripe it is given to animals only. The average produce per acre is ten maunds. The expenditure per acre is Rs. 7-8, and the value per acre about Rs. 9-8.

Bári or cotton (*Gossypium herbaceum*) is sown in *mattiyár* and good *rausli*. The seed is laid sparsely, at one ser per *kuchcha* bigha, usually in land that last bore a sugar cane crop. It blossoms in the beginning of Asauj, and from Kārttik up to the middle of Pús people pluck the pods. If while the cotton (*kapás*) is ripe in the pod (*gular*) any frost or cold of great intensity happens, the cotton is ruined and the seed (*binaula*) becomes black and moist. Manure is given to *bári*. After the cotton is plucked the stalks are cut off and the best are used for basket-making, the rest for roofing, matting to protect earthen walls during the rains, and fuel. The pods are plucked by women, who, if hired Chamáris, usually get one-eighth share for their work. The average produce per acre is three and a half maunds, and the expenditure per acre Rs. 8; the value is about Rs. 13. When the cotton plant shows the first leaf, in village parlance the season is "*dívala hoti*." The two next stages are generally known as *dopatti* and *chaupatti*. When the flower appears the plant is said to *puri lagna*, and more usually *bári lagna*. The pod is called *gular* or *dodi* or *dodu*. The appearance of the pod is described by villagers as *taint ane lagta*. The next stage is the bursting of the pod, *kapás khlne lagta*. The cotton seeds are called *binaula*, and the cleaned cotton *rúi*. The cloths manufactured from cotton in the district are *garhi*, *malmal*, *dhotar*, *gazi*, *chárkhána*, *dosúti*, *dolara*, *kalln*, and *dari*.

Dhán (*Oryza sativa*) is also frequently called *súthi* because it takes sixty days to grow. It is sown at the end of Asárh and out early in Asauj. Three sers are sown per *kuchcha* bigha, and when the ground is well covered with water an implement called a *gahan* is drawn over the surface. This is a piece of (*takhta*) timber on which four paga

(*khúnti*) are fixed. The ear remains concealed in the stalk until the latter is quite dry and threshed. This dry stalk is called in this district *purali* or *pavera*. This after being beaten out (*galna*) is used for bedding and food for cattle. The rice is eaten in many ways; (1) as *chaula*, or rice moistened, then parched, then pounded; (2), *khil*, rice moistened, then baked, is much eaten in Kárttik during the *Diwáli* festival. Hard rice which cannot be made into *khil* is made into a coarse dish called *sattu* or *bhojiya*. A very similar food is *murmura*, which is inferior rice boiled, dried and subsequently parched. Rice is found an active medicine in the cure of diarrhœa arising from heat in the system. The cultivation of rice is small in this district, and is greater in the tahsils of Gháziabad and Bágpát than elsewhere. In the former tahsil, in 1870, while the cultivation of wheat was nearly 42,000 acres, only 970 acres were devoted to the cultivation of rice. The produce is about 12 maunds to the acre: the expenditure per acre Rs. 9 and the average value about Rs. 15. *Munji* is similar to *dhán*, but smaller: it is largely grown in this district, and is much eaten by the well-to-do classes. The young *munji* is first grown in a sort of nursery and then transplanted. This crop takes longer to ripen than *dhán*. It also differs from it in appearance: *dhán* is blackish, while *munji* has a yellow tint. The ear of this too shows itself. The produce per acre is about ten maunds, and the value about Rs. 20. *Munji* is very largely grown in the Ganges *khádír*, especially in the southern portions included in the parganahs of Garhmuktesar and Púth. •

Múng (*Phaseolus mungo*) is very like *urd*. *Lobiya* (*Vigna sinensis*) is usually sown in lines with *joár*. It resembles *urd*, but is larger. When unripe it is eaten as a vegetable. When ripe the grain is moistened and eaten with salt. The consumption is small.

Til (*Sesamum Indicum*), called in Persia *kunjud*, is usually grown as a fence round crops of *joár*, *gawár*, *chari*, &c. The plant bears a flower, and the dew taken off the flower in the early morning is popularly supposed to be a panacea for all eye diseases. The plant bears an oily seed which produces what is generally known as sweet oil; this is eaten like *ghí* (or clarified butter) with food. A disease known as *chhipwa* injures this plant, producing a sort of blight which scrolls up the leaves. There is a proverb in frequent use:—" *tilon men tel nahin kahna*,"—"to say there is no oil in the seeds of sesamum," which is equivalent to our proverb, "to swear black is white." At the festival of *Sakat*, held in the month of Mágh, Hindús eat a composition of *gúr* (a preparation of sugar) and *til*, which they call *tilkut*. The stalk of the *til* is only used as fuel. *Til* is sown at the end of Asauj and is ripe about the beginning of Baisákh. The produce, sown in lines with *joár*, is about 25 sers; the expense of this sowing does not exceed one rupee, and the average price is 11 or 12 sers per rupee.

Kangni (*Setaria Italica*). This crop is sown about the end of Asárh and is cut early in Asauj. It is usually cultivated in lines with *chari*, *gawár*, *urd*, &c. The grain, a species of millet, is very small and of a hot character: it is popularly supposed to alleviate the pains attending on child-birth. The ear is very like the tail of the little squirrel called *guleri* (*Sciurus palmarum*). *Mandurá* (*Eleusine corocana*) is a very inferior grain, and is only eaten by the poorest classes. The average produce per acre is 14 maunds, the expenditure on which is Rs. 7, and the value of the crops is Rs. 14. *Chaulái*, a species of vegetable (*Amaranthus Gangeticus*), of which large quantities are found growing wild, is little cultivated. *Sawán* (*Oplismenus frumentaceus*) is like *kangni* and is grown in *dákar* land: it is little cultivated. It is said that this grain has seven distinct husks (*parat*). It is a species of millet and grows very rapidly, the time between its being sown and cut being only six weeks; it is grown chiefly for the sake of fodder. *Sánwak* (*Oplismenus colonus*). This grass, which grows wild, produces a grain which is collected by Kahárs. These people water it themselves, and after gathering it beat the grain out with a rough flail. *Pusái* or *pansái* is a kind of rice which grows wild in jhils. Kahárs collect it as they do *sánwak*. The grain is largely eaten by Hindús on their fast days. *Thor* or *thuhur* (*Cajanus Indicus*, Var.) is a species of pulse; the crop is sown as a fencing round sugarcane fields, and is very like *arhar*.

Sani (*Crotolaria juncea*) is sown in *bhúr* land and ripens in three months or less. The seed is extracted and given to cattle, and the stalk is steeped in water; when sufficiently moistened the bark is taken off and woven into ropes and coarse matting (*tát*, more generally called *gunny*).

San (*Eibiscus cannabinus*) is sown in *Chait* and cut in *Kárttik*; it is grown usually with cotton in lines, and oftener still as a fence round it. It bears a beautiful white flower; the fruit which succeeds it, called *gúlra* and *sankúkra*, is eaten as a vegetable. Ropes and *tát* are made from the bark as from *sani*, the ligneous portion of the stalk from which the bark or fibrous portion has been stripped is used as fuel, and matches are made by splitting it into thin slips and tipping them with a preparation of sulphur. The produce of the bark, a coarse hemp, is about 20 sers the acre the expenditure is not above one rupee, and the market value of the hemp is on an average ten sers for the rupee.

Wheat (*Triticum vulgare*; *gehún*).—This crop is sown in all sorts of land; ten sers of seed per *kuchcha* bigha are sown seven ploughings are requisite, the first about the end of Asárh or early in *Sáwan*. The *maira* (*henga*) is put over the land in all four times, once after every other ploughing. About three days after the wheat has been sown

khyāts are made, i. e., the field is divided off into several beds, each surrounded by a small low mound of earth. Along these mounds *sarson* (*B. campestris*) is sown. In Aghan (*Margasir*) water must be given. A little red worm called *kukhū*, afflicts this crop in the ear, especially when the east winds are constant. In *Phālgun* too injury is frequently caused by the coming on of the west winds, then the crop becomes blackish and blighted; smitten, as the English farmers say, with 'smut.' The villagers say of this that the crop is "*jhola ne māra*." When the wheat is stored, two insects find their way into the *khātī* (where the corn-dealer stores his grain): (1) the *sūra*, a black fine beetle which causes no damage and is venerated by Baniyas; (2) the *sūrsāri*, a tiny black insect which causes great injury to the grain. A good fencing of straw on the sides of the *khātī* is said to keep off this insect. Wheat is cut in *Baisākh*. The average produce per acre is eight maunds, the expenditure is about Rs. 10 or Rs. 11, the value about Rs. 18. The cultivation of wheat in this district is very extensive.

The following terms are used by villagers in relation to the cultivation of wheat and barley:—(1) when the wheat or barley first shoots from the ground it is said "*sūi nazar ane lagti*" and "*nāl dikhū detā*" and "*jins pasar aya*"; (2) when the blade throws out shoots "*tikra ane lagta*" and "*jins tatar aya*"; (3) when the crop can be cut for fodder it is called *khavid*; (4) when the ear begins to form, "*kābha*" or "*koth ane lagta*"; (5) the hair on the ear of the corn is called *pūr*; (6) when the grain is being formed, but is still unripe, "*dūdḥ par jāta*" and "*jins gadar aya*"; (7) when the grain hardens "*gola ho jāta*;" (8) and when dry *gandum* and *jau*. The grain of wheat is called *gaddi*.

The preparations from wheat are *roti*, *kachauri*, *pūri*, *pasauntha*, *nān khatḍi*, *jalebi*, *balusāhi*, *sūji*, *mathri*, *suhāli*, *shakrparā*, *chauri*, *gūnjha*, *ghewar*, *khajla*, *pahāi*, *guldāna*, *sinwāi*, *halwa*, *magad*, *mata*, *khajūr*, *sattu*, *barfi*, *khurma*, *laddu* and *pheni*, which differ in price from nine pies to ten annas per ser of two pounds. The preparations from barley are *roti*, *sattu*, *dāna arḍāwa* and *laddu*, which vary in price from six pies to one anna per ser. A festival is held on the threshing-floor as soon as a small pile (*rās*) of corn has been cleaned and winnowed. This corn is surrounded by a circuit of cow-dung, and as soon as the purohit has finished his incantations, three lots of corn are taken from the little pile and placed in three different places:—one for the purohit, the second for the Devi or local goddess, and the third for Bhagwān, or the god of the universe. After another incantation the purohit takes his share, while the Devi's share is given to a Brahman jogi, and Bhagwān's share to some fakir. The ceremony is called *siyāwarh*.

The cultivation of barley (*Hordeum hexastichon*) or *jau* resembles wheat.

Barley.

There are two species of barley grown in this district—(1) that which has the prickly hairs (*tus*) on the ear; (2) that in which they are

absent. The crop is sown rather later than wheat and reaped a little earlier. The grain is mostly eaten by the poorer classes. During the festival of the *Holi* the ears are roasted by Hindús, and on meeting they exchange parched barley in token of friendship. Hence the term *holi* (because, *jau ka hola*, or parched barley) is thus distributed. A medicine composed of water strained off from the ashes of burnt barley ears and stalks with a little butter-milk is much used as a cure for indigestion. The name given to the compound is *jauakhar*. The average produce per acre is from eight and a half to ten maunds, the expenditure about Rs. 10, and the value per acre about Rs. 18. Gram or *channa* (*Cicer arietinum*)

Gram. is usually sown in *dákar* land about the end of Asauj, and is gathered in the beginning of Baisákh. Four sers of seed per *kuchcha* bigha are sown. Neither the *maira* or *laka* are put over ground sown with *channa*. The tops of the young plants are eaten as a vegetable. When ripe, *channa* is eaten either parched or split as a *dál*. The grain is largely consumed by horses. An insect called *súnni* occasionally injures growing *channa*. When *channa* is in the *kháti* an insect called *dhora* frequently causes damage. To ward off these the people cover the *channa* with sand. The average produce is about eight maunds an acre, the expenses are Rs. 4, and at 20 sers the rupee the value would be Rs. 16. Before the flower appears in *channa* the green leaves are called *ság*. When nearly ripe, as used during the *Holi* festival, the grain is called *búnt*. From *channa* are made *dál*, *seo*, *laddu*, *nakhúdi*, *pakori*, *misi chilári* or *chilli*, *kadhi guldána*, and *chaubena*.

Peas (*Pisum sativum*) are sown at the end of Asauj and gathered in the latter part of Baisákh. The cultivation is very similar to that of *channa*. The average produce per acre is six maunds. The expense is little, and the value per acre about Rs. 10. This crop is frequently sown in lines with wheat and other *rabi* crops. *Kúsum* or safflower (*Carthamus tinctorius*) is usually sown with *channa*. It produces

Safflower. a flower with which clothes are dyed red. An insect called *ál* occasionally injures this crop. Great damage is occasioned by lightning if the crop be in flower. The *kúsum* of Ganeshpur in this district is much celebrated. *Kúsum* is sown at the end of Asauj and gathered early in Baisákh. The average produce per acre is 10 sers. The expenditure is about Rs. 2½ per acre, and the value at two sers the rupee about Rs. 5. *Torya*, a species of mustard, is very similar to *sarson*, and is little grown in this district. When cultivated at all it is usually found in lines with *árd*. The oil extracted is used for lighting purposes. *Sarson* (*B. Campestris*) is usually sown with wheat and barley and has a yellow flower. When young the green leaves are eaten as a vegetable. The *sarson* oil is known as *karwa tel*. The seed is sown in Kárttik and the plants are ready in Baisákh. The average produce per acre is one maund ten sers. The expenditure is about one

rupee and the market rate is usually about 18 sers the rupee. Another oil plant is *tárd* (*S. eruca?*), which, like *sarson*, is largely grown with wheat and barley in this district.

Arhar (*Cajanus Indicus*) is in some parts called *tár*. It is sown with *jodr*, *chari* and *makai* about *Asárh*, and is ripe in *Jeth*, thus remaining eleven months in the field; the grain is made

into *ddl*, i. e., husked and split. *Arhar* is grown in large quantities in this district. *Chaina* or *chera* (*Panicum miliaceum*) is a species of millet sown in *Chait* or *Baisákh*, and ripe in *Jeth* or *Asárh*. It is little eaten except among the poorer classes, and its cultivation is not extensive. *Jai* or oats (*Avena sativa*) is usually sown with wheat and barley as fodder for horses. The cultivation is small.

The young plants of *tambáku* or tobacco (*Nicotiana tabacum*) are reared in a sort of nursery until they become strong, when they are transplanted and grown in *bára* land, i. e., land near a town or large village. When half grown the upper leaves of the plant are torn off: this causes the essence or sap of the plant to settle in the lower leaves, which thus become large and thick. After the tobacco has been cut it lies for some days in the field, after which it is piled up and bound up into bundles. The leaves are afterwards plucked off, and the *dhanthla* (or bare stalks) are burned. Two species of this plant are grown in this district, viz., *desi* and *Kalkatiya*, the latter of which is drier. Tobacco ashes are frequently used as a cure for flesh wounds on cattle. The average produce of an acre is eight maunds: the expenditure about Rs. 10, and the value of the crop Rs. 20.

Melons (*Cucurbita melo*, or musk melon, and *C. citrullus*, or water melon) are grown largely on the banks of the *Jumna*, and to a less extent on the banks of the *Ganges* and *Hindan* rivers. They are sown in *Phálgun* or *Chait*, and are ripe during the hottest part of the summer. The average produce of an acre is from fifteen to twenty maunds. The expenditure is about Rs. 10, and the market rate on an average sixteen sers the rupee.

Indigo (*Indigofera tinctoria*) is sown, one ser of seed to the bigha, in *Chait*, *Baisákh* and *Jeth*; it is cut in *Sáwan*, *Bhádón* and the early part of *Asauj*. A severe rainy season causes immense damage. The average produce per acre is from 35 maunds to 40 of the green plant: the expenditure is about Rs. 5 per acre, and the ordinary rate is four to five maunds of the green plant per rupee. *Mirich* or chillis (*Capsicum frutescens*) *pudína* or mint (*Mentha sativa*), *dhaniya* or coriander seed (*coriandrum sativum*) and *khúra* or cucumber (*Cucumis sativus*) are sown about the same time. *Piyáj* or onions (*Allium cepa*) and *lalsan*

or garlic (*Allium sativum*), are sown in *Asauj* or early in *Kárttik*. *Chahora*, a sort of rice which grows extensively in the *Bágpát*

tahsil, (yearly about 5,500 acres), is sown in Asārā and the crop is cut in Asanj. *Masīna* is a name applied to linseed (*tisi* or *alsi*) in the Bāgpat tahsil, the only part of this district in which it is grown. The yearly area is about 1,300 acres. *Puunda* is a very large species of sugar cane. It is little grown, though sometimes to be found in Bāgpat and in the immediate neighbourhood of Meerut. Singhāra (*Trapa bispinosa*) or water-caltrop is little grown in this district. *Shalgam*, turnips (*Brassica rapa*) are as yet little cultivated, but yearly increasing. *Gājar* (*zardak*) or carrots are becoming more extensively cultivated year by year. In 1870 there were 250 acres of this vegetable cultivated in the Bāgpat tahsil. *Kāhpūs* is a sort of rice very like *munji*. It is nowhere grown but near Baraut, and there in very small quantity. *Saunf* or aniseed (*Pimpinella anisum*) is very little cultivated, only about four acres in the entire district. *Gochni* (wheat and *channa* sown together) is somewhat extensively cultivated: nearly 2,000 acres are annually grown in the Bāgpat and Kutāna parganabs. *Metki*, the plant fenugreek, (*Trigonella fenugrecum*) is little cultivated. *Masūr* or lentils (*Ervum lens*) is not much cultivated. In 1873, about 33 acres of it were grown in tahsil

Masūr.

Bāgpat: this crop is also called 'adus, and is the reputed source of the *Revalenta Arabica*. The average produce per acre is four and a half maunds. The expenditure per acre is Rs. 3 and the value about Rs. 6. *Ajwāin* (*Ptychotis ajwāin*).—This is a species of aniseed, but it is little grown. Of *gulgulīb* (rose) a few acres are found in tahsil Bāgpat. *Ker* is an oil plant with small white leaves: it is very little grown. *Bejhar*, a mixed crop of barley, wheat and occasionally oats, is frequently sown in the duāb of the Hindan and the Jumna. The pulse *khisuri* or *kesari* (*Lathyrus sativus*) is not grown in this district. The pumpkin named *kaddu* is grown in some places, but in no great quantities. *Kachra* and *kachri* are grown in considerable quantities. *Tori*, a species of vegetable marrow, is largely cultivated in the neighbourhood of large villages and towns. The *karela* (*Momordica charantia*) is cultivated to a small extent in the same localities. Potatoes are largely grown in the neighbourhood of Meerut and Hāpur, usually from what is called the Naini Tāl seed. There are three months in which potatoes are sown,—Kārttik, Bhādon, and Asanj, and they are drawn in the corresponding months of Baisākh, Mangasir, and Phālgun. The average produce per acre is from 120 to 150 maunds. The expense amounts to about Rs. 100 or Rs. 120; the value is about Rs. 180. The *kachālu* and the *alu shakarkand* (or sweet potato) are only grown in gardens. *Rend* or castor-oil plants are seldom seen, and no oil is extracted from them in this district. No grasses are extensively grown as fodder. *Bathā* is found in considerable quantities. Lucerne has till lately been cultivated by Europeans only. Here and there fields of it are to be seen in the district, and its excellence is fully appreciated by the zamīndārs who have grown it. It has come into extensive use towards

Ghāziabad. Dúb grass (*Agrostis linearis*) is to be found everywhere. It is this species that is usually collected by grass-cutters for the horses of Europeans.

The fruit-trees cultivated in the upper Duáb and the wild products of which

use is made by the inhabitants in times of scarcity may
be briefly described here. The mango or *ám* is common everywhere. The *Aurantiaceæ* or citron-worts are numerous. Amongst them is the *Ægle marmelos* (*bel*, *sriphal*, H.), the fruit of which, either made up into a syrup or taken raw, is considered a specific in cases of dysentery. The rind of the *bel* is made into snuff-boxes and salt-cellars. The wood is fit only for burning. The *Citrus aurantium*, Linn. (orange, Eng.; *nárángi* H.), is largely cultivated in groves especially near towns by the gardener caste. The *Citrus Bergamia* (lime, Eng.; *nebrú*, H.), the *Citrus limonum* (lemon Eng.; *bará nebrú*, H.) and; the *Citrus medica*, (citron, Eng.; *taránj*, H.) are all cultivated throughout these Provinces. The small variety of lime known as the *kághazi nebrú* is highly esteemed; it flourishes especially in Jaunpur and Azaingarh, and is much used in the manufacture of sherbets. The *mútha nebrú* or sweet lime is eaten. These trees flower in Mágh and Phálgun, and the fruit is ripe in Kuár (September-October.)

There are three well-known varieties of the orange: the *sangtara*, *nárángí*, and *kaunla*; the last is the smallest and most highly prized. *Nephelium litchi*, (*litchi*, H. and Eng.) has been introduced from China and is now sometimes cultivated in European gardens. The fruit is ripe in June. The *Eriobotrys Japanica* (*lokwat*, H. and Eng.) flourishes in great perfection. There are two varieties: the *surkh*, of a deep apricot colour, and the *safed*, of a light primrose colour. The trees flower in Aghān (November-December) and the fruit ripens in March-April. The guava (*Psidium pomiferum*), *amrád*, H., is one of the commonest orchard trees. It blossoms in Chait (March), and the fruit is ripe in Sáwan. There are three varieties: the common pale yellow, the *gulábi* or pink, and the *safed* or pear guava. Of pummelows (*Citrus decumana*) the two varieties known as *chakotra* and *sáda phal* are commonly cultivated. The *Spondias mangifera*; hog plum, Eng. (*amra*, H.), is occasionally cultivated; the fruit ripens in Sáwan. Besides this there are three varieties of the common plum (*Prunus domestica*) grown and known as the *alúchá*, (yellow variety) *álú bukhára* (purple), and *bili* (red). The *alúchá* flowers in Mágh (January) and ripens in Jeth (May). At the same time the peach (*Persica vulgaris*) comes to perfection; the varieties best known are the round peach (*áru*) and the *chakaiya* or China peach. The apple (*seo*, H.) has two representatives in the plains: the *desi seo* or country apple and the *wiláyati seo* or imported apple. Both are worthless as fruit; they ripen in Baisákh (April). The pomegranate (*Punica granatum*) *andár*, H., is commonly grown near villages and towns. It is naturalised in places; flowers in Phálgun, and matures its fruit in Sáwan (July-August).

There are three common varieties: the flowering pomegranate (white and pink), the *mitha* (sweet), and the *khatta* (sour).

The influence of the introduction of the canal system on agriculture will now be noticed. Throughout the whole district irrigation is extensively practised from canals, wells, and tanks. From the following table, comparing the state of irrigation at the past and present settlements, it will be seen that the irrigated area has risen from 232,869 acres to 577,291 acres, and though these figures must be received with caution, yet the fact of a very large increase in the irrigated area cannot be doubted. The increase in cultivation and the decrease in the area returned as barren and unculturable must be set down as partly due to the same cause:—

Parganah.	Barren and free of revenue.	Culturable.	Cultivated.	Irrigated.	Unirrigated.	Percentage of increase in cultivated area.	Percentage of increase in irrigated area.	Total area.
1. Meerut ... { E.,	39,689	45,449	150,021	42,482	107,539	...	...	235,153
... { F.,	42,182	25,975	166,379	99,974	66,399	10.8	135.3	234,570
2. Hāpur ... { E.,	12,283	21,559	65,285	19,261	45,974	...	...	99,077
... { F.,	13,750	12,548	77,823	39,878	37,945	19.2	107.0	104,121
3. Sarāwa ... { E.,	7,509	11,035	29,823	9,768	20,057	...	...	48,367
... { F.,	4,990	7,756	36,114	16,728	19,386	21.09	71.3	48,860
4. Garhmuktesar, { E.,	9,068	19,739	29,583	3,823	25,760	...	...	58,390
... { F.,	10,526	12,529	44,267	10,919	33,348	49.2	183.4	67,322
5. Pāth ... { E.,	6,626	9,648	20,831	2,043	18,788	...	...	37,103
... { F.,	8,350	8,853	24,079	4,946	19,133	15.5	142.0	41,282
6. Dāsna ... { E.,	12,183	26,537	47,943	26,454	21,489	...	...	86,663
... { F.,	10,675	15,241	61,932	46,174	15,758	29.1	74.8	87,843
7. Jalālabad ... { E.,	17,884	25,348	83,394	28,156	57,238	...	...	126,626
... { F.,	18,408	18,166	92,189	65,530	25,659	10.5	154.3	128,763
8. Loni ... { E.,	21,489	22,447	52,229	6,766	45,463	...	...	99,145
... { F.,	16,004	21,919	61,879	22,335	38,944	18.4	238.9	99,402
9. Bāgpat ... { E.,	26,511	15,434	79,952	14,167	65,785	...	...	121,897
... { F.,	12,890	12,870	98,369	59,064	39,305	23.0	317.6	124,129
10. Baraut ... { E.,	8,170	7,195	33,380	14,905	18,475	...	...	48,745
... { F.,	4,833	4,176	39,746	35,329	4,416	18.7	137.0	48,754
11. Kutāna ... { E.,	8,996	11,376	26,718	9,319	17,399	...	...	47,090
... { F.,	5,342	5,893	35,943	27,408	8,535	34.5	194.1	47,178
12. Chhaprauli ... { E.,	4,853	6,728	24,912	8,194	16,718	...	...	36,491
... { F.,	3,798	4,767	28,924	27,439	1,485	15.0	231.3	37,129
13. Sardhana ... { E.,	16,167	19,532	51,357	18,443	32,914	...	...	87,656
... { F.,	12,883	8,688	66,380	41,839	24,971	29.2	124.4	87,931
14. Barnāwa ... { E.,	18,140	15,115	38,262	11,047	27,215	...	...	71,517
... { F.,	14,879	7,617	50,258	26,336	23,922	31.4	136.2	72,754
15. Kithor ... { E.,	4,940	27,399	61,535	11,248	50,287	...	...	97,770
... { F.,	19,299	24,368	81,200	23,234	57,966	31.8	106.0	120,971
16. Hastināpur { E.,	14,469	33,788	60,704	8,795	51,909	...	...	108,961
... { F.,	22,648	53,442	78,060	29,008	49,052	22.3	230.9	154,150
Total ... { E.,	233,453	318,319	855,879	232,569	623,010	...	...	1,407,651
... { F.,	217,601	244,808	1,043,515	577,291	466,224	21.9	147.9	1,505,824

In the above table the area is given in British standard acres. 'E.' refers to the figures of the settlement under Regulation IX. of 1833, made by Sir H. M.

Elliot, and 'T.' to the recent settlement effected by Mr. Forbes, C.B. The figures in both statements are taken from the settlement records as affording more accurate and trustworthy data than any perfunctory inquiry at any other time.

Mr. Guthrie, in 1807, represents that irrigation was then very scanty, and that from the beginning of Aurangzeb's reign cultivation was more and more backward. At the time of Sir H. M. Elliot's assessment the Ganges canal had not been even surveyed and the full benefits of the Eastern Jumna canal had not yet been felt. The increase in irrigation in parganahs Chhaprauli, Baraut, Barnawa, Bāgpat, and Loni watered by this canal has been very marked. The growth of sugar-cane and the better crops has followed the introduction of the canal, and even at the last settlements during the few years it had been in operation its success had been such that it had "caused all the waste land in the neighbourhood to be brought under cultivation." This, too, when Chhaprauli, now, perhaps, the most fertile and highly cultivated parganah in these Provinces, was almost a desert at the British occupation. Wherever this canal runs it is highly appreciated by the villagers, and none of the evil effects which are said to accrue from the use of the Ganges canal are ascribed to its water, with the exception of those arising from the over-saturation of the soil, and which are, in a measure, avoidable by the cultivators themselves. Taking the principal crops for five years, the following statement shows the areas irrigated from this canal in each year by measurement (M.) and by contract (C.): as a rule, the contract system is preferred by the cultivators as more profitable for them:—

Crops.	1868-69.		1869-70.		1870-71.		1871-72.		1872-73.
	M.	C.	M.	C.	M.	C.	M.	C.	
Gardens, ...	606	462	871	296	1,030	4	987	...	978
Sugar-cane, ...	9,503	7,340	7,333	5,728	13,110	96	14,297	98	14,202
Rice, ...	825	1,739	4,132	2,395	6,707	19	5,077	16	5,777
Wheat, ...	27,729	21,920	41,606	1,231	43,376	255	42,920	...	36,602
Barley, ...	491	415	1,598	42	1,385	23	1,429	...	1,055
Maize, ...	23,883	3,168	3,616	3,13	3,574	14	3,538	...	1,979
Other cereals, ...	1,614	1,664	691	342	462	2	201	...	2,078
Pulses, ...	2,881	1,937	6,876	381	4,905	61	4,596	...	3,666
Fodder, ...	582	187	3,064	1,726	2,368	6	...	...	416
Fibres, ...	2,418	2,517	4,803	4,173	6,431	10	3,863	...	4,140
Dyes, ...	183	...	147	...	188	70	205	63	802
Drugs, ...	...	...	24	4	46	...	43	...	23
Oil-seeds, ...	5	3	6	...	10	...	18	...	348

The following statement shows the irrigation in each parganah from the Eastern Jumna Canal :—

Year.	Chhaprauli.	Baraut.	Kutāna.	Barnāwa.	Loni.	Bāgpat.	Total.
1866-67—							
Kharif, ...	5,390	8,287	4,864	1,246	1,510	8,324	20,621
Rabi, ...	11,040	15,640	9,167	2,658	3,220	15,893	57,608
Total, ...	16,430	23,927	14,031	3,904	4,730	24,207	87,229
1867-68—							
Kharif, ...	4,613	6,183	4,403	993	1,531	7,226	24,979
Rabi, ...	5,994	9,690	6,810	2,000	8,239	14,353	41,996
Total, ...	10,607	15,873	11,223	2,993	4,770	21,579	66,875
1868-69—							
Kharif, ...	6,453	10,498	5,563	1,513	1,718	10,226	36,571
Rabi, ...	10,753	16,559	7,521	2,318	3,625	16,413	57,219
Total, ...	17,206	27,057	13,084	3,831	5,343	27,239	93,790
1869-70—							
Kharif, ...	7,972	11,823	6,016	1,679	2,394	11,089	41,873
Rabi, ...	9,556	14,661	7,432	2,108	3,604	15,019	52,280
Total, ...	17,528	26,384	13,448	3,787	5,998	27,008	94,153
1870-71—							
Kharif, ...	6,744	8,899	4,880	1,179	2,248	9,317	32,767
Rabi, ...	9,403	13,458	7,182	2,123	3,539	15,119	50,829
Total, ...	16,152	21,857	12,062	3,302	5,787	24,436	83,596
1871-72—							
Kharif, ...	4,873	7,304	4,254	1,127	1,521	8,932	28,071
Rabi, ...	10,778	13,070	6,992	2,051	4,026	15,594	52,511
Total, ...	15,651	20,374	11,246	3,178	5,547	24,526	80,582
1872-73—							
Kharif, ...	5,760	7,969	4,859	939	1,273	7,372	28,722
Rabi, ...	7,810	10,161	6,704	1,706	3,416	13,836	43,733
Total, ...	13,570	18,130	11,563	2,645	4,689	21,208	71,805

In 1861-62 the irrigation from the same canal amounted to 78,192 acres, and in 1863-64 to 71,248 acres.

The original Ganges canal system consisted of continuous main *rajbahs* parallel to and at some distance from the Duāb watershed, but this was discarded owing to the obstruction caused to the drainage line at several points. The main *rajbahs* are now being gradually cut through at the drainage lines wherever practicable, and irrigation is extended by minor water-channels, called *guls*, carried along the watershed of the minor duābs. The whole system is thus being slowly converted into one of *rajbahs* starting from the main channel, or from favourable points in the old main *rajbahs*, and running along the ridges of the minor duābs. - This is especially the case in the upper portions of the Ganges canal. In carrying out these alterations and in the extension of irrigation several new channels and *rajbahs* have been constructed during the last ten years. The irrigation revenue of the Ganges canal is based on charges regulated by the area of land irrigated and the crops standing on that land. On the principle that various crops require water in various quantities from their occupying the land for a greater or less time, all possible crops have been divided into four classes, with a fixed tariff per acre for land irrigated in each class. The system adopted on the

Eastern Jumna canal is one of a simple fixed charge on each *kulāba* or water outlet from the distributary channel. On the Ganges canal the surveyors note from the village maps and the field registers the distinguishing numbers of each field and the crops it bears. The water bailiffs (*chaukidārs*) have small areas assigned to them, in which they must know every field irrigated, and point out such fields to the surveyor. The *zildārs*, one to each canal subdivision on the canal, collect and complete the reports of the surveyors, and calculating the charges thereon, submit the same to the Executive Engineer, who collects the revenue, village by village, through the collectors of the district. The village *patwāri* or accountant assists the *lambardār* or person engaging for the land-revenue on behalf of the village community, and who receives two per cent. on the irrigation assessment of his village for his trouble. The Ganges canal was opened in 1855, three years after the cutting in these parts had been completed, but up to 1861 there are no returns of irrigation that can be relied upon. The main Ganges canal irrigates parganahs Sardhana, Meerut, Jalālabad, Dāsna, and portions of Loni and Hāpur, and the Anúpsahr branch irrigates Hastināpur, Kithor, Sarāwa, Pūth, Garhmuktesar, and the east of Hāpur.

The following statement gives the irrigation per parganah for seven years :—

Year.	Parganah.										Total.
	Sardhana.	Meerut.	Hāpur.	Dāsna.	Jalālabad.	Loni.	Hastināpur.	Kithor.	Garhmuktesar.	Pūth.	
1866-67—											
Kharif, ...	6,052	11,774	1,187	6,138	7,047	...	3,437	1,953	980	218	38,786
Rabi, ...	9,222	19,613	2,629	13,460	20,270	50	6,248	5,790	2,974	664	80,918
Total, ...	15,274	31,387	3,816	19,598	27,317	50	9,683	7,743	3,954	882	1,19,704
1866-68—											
Kharif, ...	5,864	9,718	930	4,293	5,153	...	3,956	2,372	1,140	280	83,706
Rabi, ...	5,899	12,924	1,960	6,967	15,340	122	2,568	2,722	1,768	241	50,755
Total, ...	11,763	22,642	2,890	11,260	20,493	122	6,524	5,094	2,908	521	84,461
1868-69—											
Kharif, ...	8,504	20,318	1,072	10,348	15,301	1	5,252	4,529	3,242	982	70,341
Rabi, ...	17,532	35,608	2,819	23,299	33,284	61	13,547	9,543	7,158	4,147	1,47,486
Total, ...	26,036	55,926	4,491	33,647	48,585	62	18,799	14,072	10,400	5,129	2,17,827
1869-70—											
Kharif, ...	7,925	17,015	1,922	13,049	17,117	37	5,326	4,152	8,897	1,543	77,153
Rabi, ...	10,470	22,406	2,545	16,217	24,335	199	4,622	5,147	3,371	1,966	91,679
Total, ...	18,395	39,421	4,467	29,266	41,452	236	9,948	9,299	12,268	3,509	1,68,842
1870-71—											
Kharif, ...	6,601	13,377	1,232	7,878	9,962	9	5,102	4,203	2,735	939	52,212
Rabi, ...	11,186	25,083	2,466	18,354	26,626	11	6,613	7,820	3,931	2,709	1,05,297
Total, ...	17,787	38,460	3,718	26,232	36,588	20	11,715	12,023	6,666	3,648	1,57,509
1871-72—											
Kharif, ...	5,950	10,945	1,034	7,130	8,586	...	4,408	2,878	1,877	880	43,793
Rabi, ...	6,493	15,663	2,169	12,125	17,380	...	4,101	5,341	3,631	2,179	69,316
Total, ...	12,443	26,608	3,143	19,255	25,966	...	8,509	8,219	5,508	3,059	1,13,109
1872-73—											
Kharif, ...	5,892	9,976	1,118	6,951	6,445	...	4,115	2,914	1,986	887	40,422
Rabi, ...	7,945	13,841	2,379	13,262	13,218	6	4,499	5,214	3,363	2,392	66,251
Total, ...	13,837	23,817	3,497	20,213	19,663	6	8,614	8,128	5,349	3,279	1,06,673

Since the introduction of the canal, sugar cane cultivation has increased more than that of any other crop. The cultivation has more than doubled in the last few years. The following statement shows the area¹ under the principal crops watered by the Ganges Canal for four years:—

Crops.	1869-70.	1870-71.	1871-72.	1872-73.
Gardens, ...	1,925	1,641	1,245	1,379
Sugarcane, ...	27,320	34,011	28,045	25,807
Wheat, ...	67,822	85,554	49,186	53,363
Barley, ...	7,935	8,789	4,198	5,732
Rice, ...	8,045	4,777	4,560	4,651
Maize, ...	101,462	455	153	161
Other cereals, ...	6,912	3,667	1,441	1,561
Gram, ...	8,376	4,845	1,904	3,546
Other pulses, ...	6,238	4,154	2,207	185
Fodder, ...	1,894	272	685	611
Cotton, ...	10,616	4,343	3,904	2,133
Other fibres, ...	133	1,188	555	60
Indigo, ...	5,341	4,167	4,998	5,765
Other dyes, ...	82	115	7	323
Drugs, ...	52	48	14	30
Oil-seeds, ...	...	...	7	3

The cultivation, too, of other crops has increased, especially of cotton, indigo, and wheat. Hitherto little damage has been caused by the efflorescence of *reh*, and probably there is now little danger of any further injury. In some places

¹ It will be interesting to note here the statement of sugar cultivation given by Mr. Colin Shakespear in October, 1818:—

				1809.		1816.	
	Parganah.			Bighas.	Acres.	Bighas.	Acres.
Dāna,	382	240	638	399
Bāgpat,	1,844	1,150	2,670	1,669
Hāpur,	1,828	1,140	2,259	1,445
Meerut,	6,799	4,218	9,206	5,754
Total				10,853	6,748	14,773	9,268

where the land is low-lying and in the immediate vicinity of the canal or its *rajbahs* percolation has rendered the ground sodden, and whenever the moisture in some measure subsides *reh* appears, but in no great quantities, and it is usually found that manure counteracts its evil effects. In some few places the ground has been rendered nearly useless by excessive percolation: these spots are usually found immediately under the canal banks where a depression in the line of country has placed the course of the canal at a high elevation above the surrounding country. Occasionally, in the best land watered by the canal, *reh* appears, but now, owing to judicious arrangements respecting the supply of water, its appearance is more rare than formerly, for the zamíndárs themselves admit that it is not the water itself but its being given in excess that produces *reh*, and this view is doubtless correct, for wherever land is being constantly moistened *reh* will be found as in the low-lying *khádir* lands of the Hindan.

A very small portion of the district is now insufficiently watered. The cliffs above the rivers and the tract of undulating sand above the Ganges are, however, scantily irrigated, and as the soil in such tracts is of the poorest description, cultivation is very precarious and distress in dry years very great. Mr. Forbes anxiously calls attention to this subject. It is questionable, indeed, whether the indiscriminate introduction of canal-irrigation, even if it were feasible, would at once raise the character of such tracts. To flood a poor unpopulated tract with a sudden flush of water is more likely to exhaust its already sterile soil than to increase its productive powers. But gradual extension of irrigation cannot fail to be of the greatest benefit even to the poorest soil, and there is little doubt that Mr. Forbes' suggestion of *takkávi* advances for the construction of pukka wells in Garhmuktesar may be applied with advantage both in this and other districts to all the sandy tracts along the banks of the Ganges which lie beyond easy reach of the canal. It appears desirable that the subject of *takkávi* advances in such tracts should be taken into active consideration, unless, indeed, it is contemplated to introduce canals. But Mr. Forbes represents, on behalf of the cultivators in some parts of the Hápur and Jalálabad parganahs, and other tracts now cut off from the canal, that they should be told, once for all, what is the prospect of their being supplied with canal water, in order that they may know whether or not to sink capital in the construction of wells, which, in their present state of uncertainty, they cannot venture to do. His request is reasonable.¹ Some allusion has been made to the obstruction of the natural course of the drainage of the country by the canal water-courses. It is, therefore, satisfactory to learn that steps have already been taken to remedy this evil. Rs. 20,000 were granted in 1873 for a drainage cut in the Ohhaprauli parganah in one of the most injured tracts. The complaint is still made that individual villages have suffered by the canal in the destruction of their wells, owing to the rise in

¹ Mr. Buck, C. S.

the water-level, while the canal has not given them an equal supply in return. But all these evils are capable of being remedied, and will in time cease to exist.

There are five kinds of wells in this district: the *pukka*, *kuchcha*, *khasiya*, *dahka*, and *dher*. A *pukka* well is built at an expense, according to depth of excavation, up to Rs. 1,000, and at the bottom a frame of wood is laid perfectly level; this is called the *nahchak*, and is the frame on which the masonry is laid. On this the *gola* is built, and in order to sink the *gola* to the required depth, the earth is excavated from under the *nahchak* by a *cháhkun* or well-digger with an instrument called *jham*. The digging goes on till kunkur or a hard stratum is found, when a hole is dug with an iron bar and the water begins to rise; this hole is called the *búm*: hence the term *búm hona*, said of a well where water is perfectly inexhaustible in quantity. When a cultivator says *sarwa húa* he means that the water was so little that the well could only be worked for part of the day, while *retwa hona* is said of a well which is nearly wholly useless from being choked up with sand and silt. The *kuchcha* well is sometimes merely a deep hole dug in the earth without lining of any kind; sometimes it has a *gulá* or *kothi* made either of joined wood or *ajár* (stalks of *arhar*), or mulberry (*shahút*.) A *kothi* of joined wood costs from Rs. 40 to Rs. 60.

The *khasiya* holds a middle course between the *pukka* and *kuchcha* well, and is found in land where the soil is not of sufficiently firm character to allow of a *kuchcha* well, and where masonry is required to support the sides. Owing to percolation from the canals, except in *bánger* land, *kuchcha* wells do not now last so long as formerly. The average duration of a *kuchcha* well was before 1853-54 from ten to twelve years. It is now less than half this. The *kothis* or grain stores of the Baniyas have suffered from this percolation to an equal extent, for they have become so moist that grain will not remain good in them. The result of this is that corn is moved about much more briskly than formerly. The depth of water from the surface of the ground in land near canals has greatly lessened. In tahsil Sardhana, where 20 years ago water was from 18 to 25 feet from the surface, it is now to be found at a depth of from 7 to 10 feet and this at a distance of two miles from the canal. In Tikri in parganah Barnáwa water is found at a depth of 44 feet, in the Sarauli jungle at 46 feet, and in the Hindan *bánger* at Pánehli at 37 feet. In Rasnái Mírpur and Rohta Rasúlpur in parganah Meerut the depth of water has decreased from 33 and 35 feet to 22 and 24 feet. This takes place from the action of a *rajbaha* or distributary canal only. A *dahka* well is one sunk in high ground close by a canal or *rajbaha* whose water from the elevation of the land cannot irrigate it. The well survives from the percolation, and is usually a fairly constructed work. When it is a mere pit on land slightly elevated above a surrounding piece of water the hole is called *dher*.

In calculating the cost of well-irrigation there are three items to be regarded —the men, bullocks, and implements. Three men—
 Cost of well irrigation. the *charsiya*, *kliya* and *panmela*—are required in working a well. Their wages at $2\frac{1}{2}$ annas a day amount to $7\frac{1}{2}$ annas, and the hire of four oxen at 3 or 4 annas, say 14 annas, should be added. Under favourable circumstances, the well not being more than 45 or 50 feet deep, a two *lao* or lift well with four oxen can thoroughly irrigate one pukka bigha, or two-thirds of an acre a day. The labour then per acre will be Rs. 2-2-4; for sugar cane, however, there are generally three waterings. The well irrigation, then, of an acre will be Rs. 6-7, or with wear and tear of ropes and gear Rs. 7. It may be objected that the oxen must be kept by the cultivator for ploughing purposes, and that their labour should not be valued, as they would otherwise be doing nothing. But it appears to be generally agreed that a cultivator whose land receives canal irrigation can cultivate his thirty bighas with as much facility as the man dependent on well-irrigation can his twenty bighas. The one great complaint against the canal system is that the *tatils* (or periods of suspension of irrigation) are frequently fixed at times when water is absolutely necessary for the success of a crop.

In 1871 the irrigation from wells in the Meerut tahsil was returned at
 Amount of well-irrigation. 55,132 acres, and from other sources as tanks, jhils, &c., at 3,328 acres; Sardhana, wells 40,690 acres and tanks, &c., 1,715 acres; Hapur, wells 60,841 acres, and tanks, &c., 2,733 acres; Ghaziabad, wells 70,177 acres, and tanks 1,903 acres; Mawana, wells 20,122 acres, and tanks 904 acres, and Bagpat, wells 44,423 acres, and tanks 1,672 acres. The district total for that year shows wells, 291,395 acres; tanks, &c., 12,255 acres, and canals, 280,179 acres, or a grand total of 583,829 acres out of a cultivated area amounting to 1,043,515 acres, leaving only 466,224 acres unirrigated. The wells have held their place to a great extent, though in the best well tracts along the watersheds of the lines of drainage numbers have been destroyed from percolation. This result could not be avoided, since it was necessary to lead the main lines of canal along the same watersheds, to avoid those tracts in which the loose and broken nature of the surface and the disintegration of the under lying strata presented as formidable obstacles to the construction of canal channels as it did formerly to wells.

The injuries to which different crops are subject in this district are briefly
 as follows:—*Silái*, a small insect with dark-red and
 Blights. brown body, which injures sugar cane, maize, and *jodr*.
Gobh is produced by the prevalence of severe winds and consists in the plant giving out little stems which weaken it. *Sundi* is a large black-headed green worm which attacks the plant during the east winds, and attacks gram and peas as soon as the flower appears. *Kukhi* and *ratwa* are little red worms which

attack wheat and barley in the ear, giving a crop quite a red appearance. They appear principally during the prevalence of east winds and excessive rain. *Chhipwa* attacks *til*, *másh* and *sarson*. *Bhaunri* is a small and very thin earthy-coloured worm with a black head which appears on *jodr* when there is drought. *Karanjwa* is the name given to smut in barley. The same name is given to the blight which attacks wheat and sugar cane, when on breaking a stem a dark inky matter exudes. When from the falling of rain *moth* becomes covered with earth the plant dries up. This condition is expressed by villagers as "*tarkwa ne mára*." The *ál* is an insect which afflicts *kásum* and *sarson* and the *kanswa* injures sugar cane in the early period of its growth. *Khandwa* is produced by floods in the *kharif*. *Tiddi* or locusts rarely do damage. They sometimes, however, appear in the *kharif*. *Pála* (hoar frost) and *ola* (hailstones) frequently cause much destruction. A crop injured by an adverse wind is said to be *bayár ne mára*. This term is especially used in reference to the sugar cane and cotton crops. Mist (*kukra*) is most injurious to the *sarson* plant. *Bájra* and *jodr* are sometimes afflicted by the worm *genlwa*.

This district is not subject to floods to any great extent. Sometimes from
 Floods, &c. the rising of the Ganges and Jumna some damage is done to the *kharif*, but even this is of rare occurrence. Sometimes, too, from the impeding of drainage by the network of *rajbahas*, some temporary injury is done, but before the succeeding rains can repeat the damage the necessary syphons or aqueducts have, usually, been constructed. Some account of the various drainage schemes taken in hand by the Irrigation Department has already been given, and all that need be said here is that the magnitude of the evil is fully recognized, and prompt measures have now been taken to remedy the defects in the present irrigation lines. To prevent the recurrence of floods from the Jumna in parganah Loni the Jumna embankment has been constructed. The chief difficulty in the way of the work is the sandy character of the soil in the neighbourhood, but it has on the whole been successful.

Meerut district is, humanly speaking, safe from the miseries of extreme
 Famines. famine owing to its magnificent system of canal irrigation and facilities for sinking wells. During the last famine year (1868-69), the area watered by the Ganges and Eastern Jumna Canals was 311,825 acres, or 30 per cent. of the cultivation. The total irrigated area from wells and canals was 577,346 acres, or 56 per cent. of the cultivation. 166,407 acres of the canal tracts were sown with wheat, and the impetus given by the high prices to the production of food and fodder crops was very great. The Panjab and Delhi Railway now runs from north to south, joining the East Indian Railway at Gházíabad, and thus opens a passage for the commerce of the lower Duáb. The Ganges and Jumna rivers and Ganges canal further facilitate

trade. There are good roads connecting the great centres of population with one another; and the imperial lines of road and the railways form channels of communication with surrounding districts. While therefore Meerut possessed good natural advantages increased manifold by art, it also enjoyed an accessible situation during the famine of 1868-69, and it was heavy exports from this district that kept up prices in it. The grain exported from the district at first to the lower Duáb, and later on to the Panjáb, Saháranpur, and Rohilkhand, is estimated at more than half a million of maunds. There was no widespread suffering in Meerut: works were undertaken experimentally at various points, but the people did not resort to them, and whatever need for relief there was appeared among the poorer urban classes alone, and among them for a short time only. The prices ruling during the seasons of scarcity are given under "prices."

There is no stone in this district except such as is brought from Delhi and

Bricka. Agra. The average price of the small brick (*lakhora*), the dimensions of which are $5'' \times 3\frac{1}{2}'' \times 1''$, is Rs. 125 per

lakh, or 100,000, at the kiln stacked; of the next in size about Rs. 200 or Rs. 225 per lakh; and of the large Government brick called *guma*, $12'' \times 6''$, the price at the kiln is from Rs. 650 to Rs. 800 per lakh. *Sál* (*Shorea robusta*) is not grown

Timber. in this district, but large quantities are brought down from Hardwár by the Ganges Canal. *Shítsham* (*Dalbergia*

sissu) and other woods are largely grown in this district; the average price per foot is twenty annas. The usual price of *jáman* (*Eugenia jambolanum*) is twelve annas; of *ním* (*Azadirachta Indica*) also 12 annas, and of mango (*Mangifera Indica*) eight annas per cubic foot. *Kíkar* (*Acacia Arabica*) is much used in making agricultural implements as ploughs, *gárls*, and the *kolhu* or sugar-mill pressing logs. The wood of the *gúlar* (*Ficus racemosa*) is used always for making the *kotha* or foundation-frame of a well, as damp does not injure it. The wood of the *síras* (*Albizia lebbek*) is little used for building purposes. *Jáman* wood will, as a rule, not last more than twenty years; after that it becomes afflicted with a dry rot. *Mahúta* or *maua* (*Bassia latifolia*) is not much grown, but its wood is much esteemed. *Dhák* (*Butea frondosa*) is largely grown and much used in building. From *sháhtút* or mulberry (*Morus Indica*) the villagers make yokos for their oxen; the wood is considered particularly soft and strong. *Sembal* (*Bombax Malabaricum*) is used for beams; *tín* (*Cedrela toona*) only for ornamental beams and supports.

The value of kunkur lime is about ten or twelve rupees per 100 maunds. In the

Lime, Gháziabad tahsíl, lime is manufactured from kunkur found in pits in the village of Ohhajupur; in the parganah of Hápur, at Ayádnagar and at Sadullahpur; in tahsíl Sardhana, near Malabra, and in parganah Meerut at Tihrot, and in the neighbourhood of Meerut. Kunkur is of two kinds: the large block kunkur so extensively used in canal works is

called *chatán*, the small kunkur for roads is termed *bichhwa*. The most extensive kunkur pits from which *chatán* is dug are those of Nándpur and Naráyanpur in the tahsil of Gháziabad, and in the same locality many other villages have pits of *bichhwa*. In parganah Garhmuktesar there are kunkur pits at Farídpur, Sikhera, Rájpur, and Dattiyána; in parganah Saráwa at Rasúlpur Dantla; in parganah Hápur at Náli Hasanpur and Brijnáthpur, a village also known as Bahramand Básh. In Meerut, kunkur is found in many villages. The pit nearest the city and cantonments is that in the present police lines near the old cantonments of the Sappers and Miners. In the parganahs included in tahsils Bágpát, Mawána and Sardhana kunkur is found, but is not so extensively scattered as in the southern portions of the district. Kunkur for roads must be stacked nine inches deep for consolidation to six inches. The quantity on a mile of a road 12 feet wide would therefore be 47,520 cubic feet. The cost at Rs. 4 per 100 cubic feet would be Rs. 1,900. The cost per 100 cubic feet is for excavation, cleaning and stacking one rupee, consolidation twelve annas, and cartage at the following rates per mile: for one mile twelve annas, and for each succeeding mile one anna less per mile up to five miles. From 6 to 8 miles, 8 annas; from 8 to 14 miles, 7 annas; and above that 6 annas.

The principal source from which salt was formerly obtained in the Meerut district is the extensive salt tracts of Gháziabad, portions of which lie in the Loni parganah and portions in the Bulandshahr district (page 34). This salt tract is situated in the low-lying *khádír* lands of the Jumna, and stretches from beyond the town of Loni along the banks of the Jumna, to within the boundary of the Bulandshahr district. Since 1833 A. D. the manufacture of salt on this tract has been entirely suppressed, but previous to that year many thousand maunds of salt of a good quality used to be manufactured yearly. A little saltpetre is manufactured in this district: about 150 factories (all crude), producing from 150 to 200 maunds each, being worked yearly: of this number, the majority are clustered in parganah Bágpát, and the remainder are scattered all over the district. Previous to 1867 a saltpetre refinery was worked at Hápur, but since that year it has been closed owing to the depressed condition of the saltpetre trade. Impure carbonato of soda, or as it is usually called "*reh*," is found in small quantities in most places notably in the low lying *khádír* lands of the Hindan. It is collected and used in washing by dhobis.

PART III.

INHABITANTS OF THE DISTRICT.

THE first enumeration of the population of this district took place in 1847 under the superintendence of Mr. C. Gubbins and Mr. E. C. Bayley. Owing to the changes that have taken place in the

distribution of the parganahs since then, it would be useless to give the parganah details.¹ The district as it then stood contained a population of 860,736 souls, or 488 to the square mile. Of these 329,133 were Hindús engaged in agriculture, and 327,704 were Hindús occupied in employments other than agriculture. The Muhammadans numbered 203,899 souls of whom 140,923 were engaged in occupations other than agriculture. From this it will be seen that about one-half the Hindús and two-thirds of the Musalmán population derived their livelihood from pursuits unconnected with the cultivation of the soil. The total number of villages was found to be 1,774, of which 317 were uninhabited. Of the inhabited villages 1,252 contained less than 1,000 inhabitants, 187 between 1,000 and 5,000, 13 between 5,000 and 10,000, and five between 10,000 and 50,000.

The first regular census was taken on the eve of the new year of 1853. The returns for this year are given under the present distribution into parganahs, and are therefore of some value for detailed comparison.² The total population of the district, as it then stood, numbered 1,135,072 souls, giving 516 to the square mile. Of these 885,238 were Hindús and 249,834 were Musalmáns. The Hindús showed 427,785 employed in agriculture, of whom only 190,680 were females. The Hindu non-agricultural population numbered 457,453 souls, of whom 211,639 were females. From this it appears that in 1853, the percentage of Hindu females of the agricultural population to the total Hindu agricultural population was 44·5, and amongst those not engaged in agriculture was 46·4—a difference most probably due to the practice of infanticide and observable to the present day. The Musalmán population numbered only 82,350 agriculturists, of whom 38,354 were females, while those otherwise employed were 167,484, of whom 79,098 were females. Here we have the position of females reversed, the agricultural female population numbering 46·5 per cent. of the total agricultural population while the remainder are only 41·2 per cent. of their class. There were 1,077 villages containing less than 1,000 inhabitants, 288 with more than 1,000 and less than 5,000, five towns between 5,000 and 10,000, and three between 10,000 and 50,000.

The next regular census was taken on the 10th of January, 1865, and forms the first important collection of statistics that we possess. The principal results regarding this district are shown below and compared with the census of 1853. The table gives the parganah population according to sex and religion and the density per square mile.

¹ They may be found in Shakespear's Memoir, Calcutta, 1848. The changes made in 1852 and noted under administrative sub-divisions on a previous page should be remembered in connection with the subsequent years. The district then lost 135 villages.

² See Christian's Report, page 120: Calcutta, 1854.

Parganah.	Hindús.			Musulmán's.			Total population.			Population per square mile.
	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	
Meerut, {	1865, 109,420	94,747	2,04,167	35,160	29,214	64,374	144,580	123,961	268,541	712
1853, {	120,428	98,012	2,18,440	43,707	36,886	80,593	164,131	134,898	299,039	793
Hápur, {	1865, 38,136	32,876	71,012	10,422	9,326	19,748	48,553	42,202	90,760	551
1853, {	37,294	32,476	69,774	9,891	9,053	18,944	47,589	41,529	89,118	641
G ar h- m u k- tes ar, {	1865, 20,477	13,190	33,667	7,305	5,862	13,167	23,882	19,052	42,934	404
1853, {	16,686	14,372	31,058	6,613	5,997	12,610	23,299	20,369	43,668	416
S ar áw a, {	1865, 13,344	11,889	25,233	4,851	4,361	9,212	18,123	16,250	34,373	443
1853, {	14,156	12,022	26,178	5,037	4,472	9,509	19,193	16,494	35,687	459
S a r- dhana, {	1865, 32,791	27,453	60,244	10,961	9,732	20,693	43,752	37,185	80,937	592
1853, {	32,532	26,656	59,188	10,976	9,931	20,907	43,508	36,587	80,095	585
B ar n á- w a, {	1865, 29,374	24,797	54,171	4,852	4,315	9,167	34,226	29,112	63,338	559
1853, {	27,614	22,889	50,503	4,491	4,043	8,534	32,105	26,932	59,037	521
Kithor, {	1865, 18,000	14,370	32,370	15,532	14,756	30,288	33,532	29,271	62,803	322
1853, {	27,036	22,727	49,763	8,637	7,742	16,379	26,733	23,469	50,202	342
D á s n a, {	1865, 27,857	23,710	51,567	10,163	9,180	19,343	38,020	32,890	70,910	524
1853, {	27,315	22,548	49,863	9,238	8,516	17,754	36,053	31,064	67,117	499
J al á l a- b á d, {	1865, 43,357	36,211	79,568	9,205	8,419	17,624	52,562	44,630	97,192	485
1853, {	41,757	36,009	77,766	8,143	7,662	15,805	49,900	43,671	93,571	467
B á g p a t, {	1865, 27,687	39,055	66,742	9,722	8,683	18,405	56,409	47,738	104,147	542
1853, {	43,242	36,305	79,547	7,025	6,350	13,375	50,267	41,653	91,922	478
B ar a u t, {	1865, 21,474	18,367	39,841	7,123	6,290	13,413	28,597	24,657	53,254	699
1853, {	21,203	17,434	38,637	4,143	3,622	7,765	15,346	12,056	27,402	609
K u t á n a, {	1865, 21,328	17,795	39,123	2,097	1,948	4,045	23,427	19,743	43,170	585
1853, {	18,695	15,709	34,404	2,064	2,036	4,100	20,759	17,745	38,504	520
C h h a- p r a u l i, {	1865, 16,972	14,216	31,188	2,379	2,017	4,396	19,351	16,233	35,584	614
1853, {	15,187	13,193	28,380	2,784	2,467	5,251	17,971	15,473	33,444	577
P ú t h, {	1865, 9,023	7,810	16,833	2,246	2,066	4,312	11,269	9,876	21,145	329
1853, {	8,876	7,948	16,824	2,043	1,999	4,042	10,919	9,947	20,866	350
H a s t i- n á p u r, {	1865, 20,605	16,395	37,000	17,200	14,866	32,066	37,805	31,261	69,066	293
1853, {	30,434	25,206	55,640	7,590	6,676	14,266	38,024	31,682	69,706	216
L o n í, {	1865, 26,810	22,171	48,981	4,769	7,762	12,531	33,516	27,996	61,512	397
1853, {	482,919	402,919	885,838	132,382	117,452	249,834	615,301	519,771	1,135,072	516
Total, {	1865, 496,796	416,949	913,745	159,889	137,647	297,536	655,685	554,596	1,210,281	513
1872, {	537,188	454,038	991,226	147,756	134,101	281,857	665,414	588,510	1,253,924	541

The grand total in 1865 includes 1,463 railway employes and 10,225 military. Besides these, the Europeans in 1865 numbered 2,590 souls and the Eurasians 329. In 1872 there were 2,194 Europeans and 142 Eurasians.

In 1865 there were 297,784 houses in the district, giving 4.02 persons to each house. In Meerut city, the houses numbered 15,497, giving 3.57 to each house, and in cantonments there were 7,886 houses, with 3.03 inhabitants to each house. There were 292 villages with less than 200 inhabitants, 488 with from 200 to 500, 359 with from 500 to 1,000, 225 with from 1,000 to 2,000, 87 with from 2,000 to 15,000, 10 with from 5,000 to 10,000, two from 10,000 to 50,000 (Sardhana and Hápur), and Meerut city and cantonments with 79,378 inhabitants.

In 1872 the census was effected on the night of the 18th of January. It

Census of 1872. gives a more complete enumeration than any other previously attempted, and may be accepted as absolutely correct in regard to

numbers and as a fair estimate in matters of caste distinctions.¹ There were 1,573 villages in the district in 1872, containing 131,563 enclosures and 268,650 houses. These numbers give 0·7 villages to each square mile, 811 inhabitants to each village, 55 enclosures to each square mile, and nine souls to each enclosure. There are 114 houses in each square mile, giving an average of 4·7 persons in each house. Of the houses, 19,928 were built with skilled labour and were inhabited by 91,711 souls, or 7·2 per cent. of the total population, while 1,182,203 persons, or 92·8 per cent. of the inhabitants, occupied 248,722 houses of the inferior sort. There were 322 villages having less than 200 inhabitants, 488 with from 200 to 500, 413 with from 500 to 1,000, 243 with from 1,000 to 2,000, 58 with from 2,000 to 3,000, 34 with from 3,000 to 5,000, 12 with from 5,000 to 10,000, two with from 10,000 to 15,000, and one (Meerut) having a population exceeding 50,000. The density of the population of the whole district was 541 to the square mile.

The statistics as to sex and religion for each parganah in the district are given in the following table, with the broad division of age into minors (15 years and under) and adults:—

Parganah.	HINDUS.				MUHAMMADANS AND OTHERS NOT HINDUS.				TOTAL.		Population per square mile.	
	Up to 15 years.		Adults.		Up to 15 years.		Adults.		Male.	Female.		
	Male.	Fe- male	Male.	Fe- male.	Male.	Fe- male.	Male.	Female.				
Meerut with City and Cantonments	42,020	33,262	07,240	53,218	14,820	12,863	24,005	22,400	148,108	120,703	274,800	751
Hajpur, ...	10,603	13,337	23,602	21,930	4,624	3,727	6,517	6,107	51,340	45,430	96,770	591
Sarawa, ...	5,970	4,709	8,234	8,015	2,198	1,370	2,914	3,109	19,402	17,853	37,255	400
Garhmuktesar, ...	7,187	5,904	10,530	11,122	2,930	2,559	4,317	4,141	24,994	21,949	46,913	447
Pith, ...	4,330	3,704	6,107	5,453	1,013	933	1,409	1,133	12,765	11,431	24,190	372
Jalalabad, ...	18,634	14,152	28,177	26,011	4,091	3,622	6,078	5,684	57,167	48,392	105,559	535
Dasma, ...	13,421	10,533	18,535	10,493	4,708	4,303	6,694	6,491	43,543	37,785	81,333	591
Loni, ...	11,873	9,534	17,049	14,769	2,773	2,356	4,381	3,907	31,079	30,006	61,115	424
Bagpat, ...	20,058	15,330	29,311	20,176	3,563	2,903	5,310	4,970	58,777	49,391	108,168	558
Kutana- Baraut, ...	8,022	7,136	13,145	11,485	1,043	868	1,508	1,434	24,618	20,943	45,561	324
Chhaprauli, ...	10,029	8,658	14,870	13,090	2,178	1,847	3,205	2,949	30,288	25,032	55,320	740
Barnawa, ...	8,877	5,358	10,208	9,222	1,329	1,087	1,900	1,613	20,464	17,511	37,975	614
Sardhana, ...	12,140	9,008	17,045	10,636	2,129	1,691	2,850	2,767	34,394	30,103	64,497	570
Hastinapur, ...	12,888	10,061	20,161	17,418	4,700	3,750	6,903	6,502	44,601	37,740	82,301	601
Kithor, ...	13,632	10,540	18,971	10,800	3,251	2,825	4,848	4,438	40,732	34,612	75,344	311
	11,858	9,223	16,081	14,493	4,120	3,483	6,594	5,404	37,593	32,550	70,143	309

The total population numbers 1,273,914, giving 541 persons to the square mile, and comprises 685,404 males and 588,510 females. The total number of Hindú males is 537,188, or 54·2 per cent. of the entire Hindú population: Hindú females number 454,038 souls, or 45·8 per cent.; Musalmán males number 147,756, or 52·4 per cent. of the whole Musalmán population, and females of the same religion number 124,101, or 47·6 per cent. Amongst the Muhammadans in the above table are included 460 Christian males and 371 Christian

¹The parganah details are not given here, they will be found under the parganah notices in the Gazetteer portion of this District.

females. The percentage of Hindús on the total population is 77·8, and of Musalmáns 22·2, or 10 Musalmáns to every 35 Hindús. The percentage of males on the total population is 53·8, and of females 46·2; the divisional percentages being 54 and 46 respectively.

Statistics relating to infirmities were collected for the first time in 1872 and give the following results. There were 86 insane (*págal* or *majnún*) persons (26 females), or 0·6 per 10,000 of the total population; 54 persons (13 females) were returned as idiots (*fátir-ul-akl* or *kamsanujh*), giving 0·4 per 10,000; 145 (61 females) were deaf and dumb (*bahra aur gunga*), or 0·11 per 1,000; 2,866 (1,211 females) were blind (*andha*), or 0·22 per cent., and 305 (36 females) were lepers (*korhi* or *jazámi*), or 0·02 per cent. of the total population.

Statistics of age. Statistics of age were also recorded for the first time in 1872. The following statement gives the district totals for Hindús and Musalmáns of each sex at different ages, with the percentage on the total population of the same religion. The total population is given irrespective of religion :—

Age.	Hindús.				Musalmáns.				Total population.			
	Males.	Percentage on total Hindús.	Females.	Percentage.	Males.	Percentage on total Musalmáns.	Females.	Percentage.	Males.	Percentage on total population.	Females.	Percentage on total population.
Up to 1 year ...	25,799	4·8	22,711	5·0	7,226	4·8	6,746	5·0	33,025	4·8	29,457	5·0
Between 1 and 6 ...	77,368	14·4	65,906	14·5	21,212	14·3	19,638	14·6	98,580	14·4	85,544	14·5
„ 6 and 12 ..	81,964	15·3	68,532	12·8	22,702	15·8	17,504	13·0	104,750	15·2	86,036	12·9
„ 12 and 20 ...	87,489	16·2	70,240	15·4	23,373	15·8	21,146	15·7	110,949	16·1	91,386	15·5
„ 20 and 30 ...	103,929	19·3	90,291	19·8	29,145	19·7	26,775	19·9	133,136	19·4	117,066	19·9
„ 30 and 40 ...	74,545	13·8	64,682	14·2	19,955	13·5	18,342	13·6	94,551	13·7	83,024	14·1
„ 40 and 50 ...	47,570	8·8	43,373	9·5	12,902	8·7	12,558	9·2	60,518	8·8	55,931	9·4
„ 50 and 60 ...	25,541	4·7	24,404	5·3	7,105	4·8	7,303	5·3	32,667	4·7	31,707	5·3
Above 60 ..	12,983	2·2	13,893	3·0	4,186	2·7	4,389	3·2	17,131	2·4	18,282	3·1

Taking the children up to 12 years of age, we find there are 344·9 boys and 324·7 girls in every 1,000 of the same sex or 334·8 taking both sexes, against

354 in England. From 0 to 10 as compared with England the proportion of children is greater; from 10 to 15 there is a falling off; from 15 to 40 again an excess. The decrease between 10 and 15 occurs principally in girls, and Mr. Plowden considers this is mainly attributable to the fact that the existence of girls of that age is systematically concealed¹.

In the Meerut district great care was taken by Mr. Plowden to insure accurate statistics of child life. He found 83,051 male children up to one year of age, of whom 13,238 children were exactly under one year, leaving 19,813 males under one year of age. The female children up to one year of age numbered 29,479, of whom 12,127 were exactly of the age of one year, leaving 17,352 female children under one year. These figures afford fair data for calculating the number of infants in a district, and as it is the only district where much care has been taken on this point, I will make no apology for introducing here Mr. Plowden's comparative table, the proportion borne by infants at this term of life to the total population of both sexes per 10,000 of the population:—

Place.	Year of census.	Both sexes.	Male.	Female.
Meerut,	1872	2,919	2,890	2,948
England,	1861	2,935	2,997	2,874
France,	1861	2,168	2,211	2,125
Italy,	1870	3,831	3,394	3,270

On these figures Mr. Plowden remarks that though apparently assimilating more closely to the English than to the Italian numbers for the first period of life, yet "taking into consideration the high figures given for the quinquennial period, 0 to 5, I consider we are justified in accepting it as a fact that the average duration of life in this country is very much lower—lower to an extent which has not yet been noticed in public records—than is the duration of life in England; and further than this, it may, I think, be said the Italian average duration is nearly approached in this province." In support of his argument Mr. Plowden quotes the mortuary statistics of seventy rural circles in which the rate of mortality exceeds the Italian average, and is far above the English rate. The quinquennial periods up to fifteen years of age referred to above, viz., from 0 to 5, 5 to 10, and 10 to 15 show a proportion of both sexes to the total population of 16·8, 12·1 and 10·1 respectively, the proportion of females to the total population during the same periods being 17·0, 11·4, and 9·0 per cent.

¹ For a further notice of this interesting point, see Census Report, I, liv.—lix. The details of ages exceeding 60 years for this district are given, *ibid*, 450.

Here we see the females in excess during the first period, and decreasing during the other two.

Taking the Hindús and distributing them amongst the four great classes of Castes, Brahmins, Rajpúts, Baniyas and other castes, we find in the Meerut district there were 109,804 Brahmins, of whom 50,396 were females; 55,033 Rajpúts (23,830 females); 69,942 Baniyas (31,832 females), while all the other castes numbered 756,447 souls, of whom 347,980 were females.

The Brahmins comprise 11·1 per cent. of the total Hindu population, and principally belong to the great Gaur division, which here numbers 95,809 souls (44,216 females); next come the Saraswat (2,130); Bhát (1,807); Acháraj (1,644); Dakaut (1,509); Chaurasiya (1,269); Dasa (574); Gujrátí (813); Sanádh (623); Bohra (474); Gautam (581); Kanaujiya (551); Pallewál (350); Taga (355), and Sarwaríya (215). Gangaputr, Kashmiri, Kándhlawál, or Khandelwál, Nagar, Padho, Pachháde, Rabiya and Vasisht Brahmins are also met with in small numbers. As landholders¹ they are chiefly found in the Bágpát, Hápur, and Meerut tahsils. The Bháradhvaj *gotra* holds 12 villages; Goran, 3; Alambáh, 2; Kishnátri, 1; Dichhit, 2; Soti, 2; Tiwári, 1; Gautam, 8; Gaur, 26; Surajdhvaj, 1; Bangáli, 1; Gárg, 1; Pachhas, 7; Barásur, 3; Kasbásur, 1; Dálab, 1; Ataghan, 1; Tonga, 1, and Kausik, 1, or a total of 75 villages. In the Gaur division the Gaur tribe is the most important, and in the Drávira division the Gujrátis are the most numerous members in this district. The Acháraj subdivision holds one village in Bágpát occupied by members of the Kátyán clan. The above details are given according to the classification shown in the census returns and in the reports on the land-owning tribes. As a matter of fact, all Brahmins belong to either of two divisions, the Gaur or the Drávira. The first prevails in the north of India, and the latter in the south, but Dráviras are also fairly represented in every district in these provinces. Each of these primary divisions contains five great tribes, which again admit of almost endless subdivision. The tribes of the Gaur² division are the Kanaujiya, Sáraswat or Sarasút, Gaur, Maithil and Utkal, and the five tribes of the Drávira subdivision are the Maháráshtra, Tailang, Drávira, Karnát and Gurjjar. In addition to the Brahmins of the ten tribes there are numerous subdivisions bearing the name of Brahman and performing certain religious ceremonies usually attempted only by Brahmins, of whom some mention must be made.

¹ The statistics as to the landowning tribes were carefully compiled by Nasir Ali Khán, late Deputy Collector of Meerut, at the request of Mr. S. H. James, C.S., and contain the most accurate record of landholders in this district that we possess. ² There is good reason for believing that the word 'Gaur' has no connection with Gaura, an old name for Bengal, and that it represents the name of a kingdom in eastern of Oudh, traces of which are seen in the word Gonda, which still gives a name to a district.

In most of the caste lists they are placed in a division by themselves called the "*Das-ke-sirdi*." The principal are as follows :—

- | | |
|---|---|
| 1. Máthur or Mathura-ke-Chaube. | 25. Ajáchi. |
| 2. Máradh or Gayawal. | 26. Gurjjar Kurmachali. |
| 3. Shá'dwipi. | 27. Parvati or Pahári or Nayapáli. |
| 4. Málawi. | 28. Kurmachali or Kumaoni. |
| 5. Saptshati Bangáli. | 29. Kanauiya Kurmachali. |
| 6. Shenavi or Senavi. | 30. Maháráshtra Kurmachali. |
| 7. Palashe. | 31. Putáne Kurmachali. |
| 8. Bhandariye or Maddáli or Dakaul or Joshi | 32. Kattbak. |
| 9. Mahabrahman or Acháraj. | 33. Bhát or Rajbhat or Jasaundhi. |
| 10. Sawá'alkúja. | 34. Lingiye. |
| 11. Gangaputr. | 35. Ghátiye. |
| 12. Prayágwál. | 36. Pallewál or Bárhar or Athbariya or Bohra or Káinya. |
| 13. Bhuinlár. | 37. Págaríya or Parchúnga. |
| 14. Sengardaro. | 38. Pande. |
| 15. Sanakáhár. | 39. Unauriya. |
| 16. Thatiya. | 40. Golapúrab. |
| 17. Páráshari. | 41. Nárl. |
| 18. Píráli Bangáli. | 42. Lyáriye. |
| 19. Ahavási or Halwasi. | 43. M, ále. |
| 20. Purait. | 44. Darádwipi. |
| 21. Byás. | 45. Brahmans of Dehra Dún. |
| 22. Yamunaputr. | 46. Suraula. |
| 23. Bilawár. | 47. Gingára. |
| 24. Kishúshvar. | 48. The numerous hill Brahmans in Northern India. |

With the exception of the first four Drávira tribes not one of the ten tribes or these forty-eight outside tribes cat together or intermarry. The Gaur tribe of Kanauiyas will be noticed under the Etáwa district and I will here give a short account of the Gaur tribe of the division. The caste lists give the following sub-tribes as belonging to the Gaurs :—Adigaaur, Srigaur, Sanádh or Sanorhiyas, Taga (?) Madhya Sreni Bangáli, Hiranya or Hariyánawála, Pushkarne Gaur, Bhojaka, Bhárgava, Sháhábádi, Purbiye Gaur, Pachháde, Chaurásiya, Thákuráyan, Kakariya, Dasagaaur and Deswáli Chhannat. Of the last sub-tribe, which is chiefly confined to Málwa, there are six branches :—the Gurjjar Gaur, Párikh, Sikhawál, Dáyama or Dadhicha, Khandelwá lor Kándhlawal and Ojha or Gaur Sáraswat. To obtain an accurate idea of the distribution of these tribes it is necessary to add together all the scattered entries in the census returns and compare them with the total number of Brahmans in each district. The following statement shows the number of Brahmans of the Gaur tribe and the total number of Brahmans in the districts in which the Gaur tribe is predominant. The Tagas are separately given as it is more than doubtful whether they should be included amongst the Brahmans, and it should be remembered that the Brahmans entered only under the name of their *gotras* or as unspecified form no inconsiderable number in the census returns, so that the figures as to the number of Gaurs here given must be taken as an estimate below the actual numbers.¹

¹ In Aligarh alone 106,517 Brahmans are entered as unspecified, and in Muttra 115,226.

District.	Gaur tribe.	Total number of Brahmins.	Tagas.
Dehra Dún,	1,154	10,279	...
Sahāranpur,	41,078	45,148	15,208
Muzaffarnagar,	38,395	40,654	11,947
Meerut,	97,734	109,449	43,417
Bulandshahr	87,466	98,932	6,756
Aligarh,	32,692	148,249	...
Bijnaur,	26,792	28,789	10,505
Moradabad,	31,085	47,744	11,055
Budaon,	55,840	63,541	...
Bareilly,	7,932	76,442	...
Muttra,	22,543	148,762	...
Etāwa,	37,416	93,082	...

The Gaurs are distributed throughout the Meerut division, the western districts of Rohilkhand, and the northern districts of the Agra division. In the Agra district and southwards, through the Duāb and in eastern Rohilkhand, they give place to the Kanaujiyas. Each of the sub-tribes is divided into *gotras* bearing specific titles such as Dikshit, Ohaube, Tiwāri, Gautam, Nirmal, &c. Thus the following *gotras* have the titles annexed to them:—

<i>Gotra.</i>	<i>Title.</i>
Kausik,	Dichhit.
Kishnātri,	Chaubc.
Bhāraddhvaj,	Tiwāri.
Parāsūr,	Nirmal.
Vatsa,	Nāgwān.
Gautam,	Vidhata.
Sandil,	Haritwāl.
Vaiesht,	Ghāgsān.

There is such confusion between the titles of *gotras* and the names of the *gotras* themselves, not only in the census papers but amongst the people, that it is hopeless, at present, to arrange these intricate subdivisions on an intelligible basis. The recent discovery of an inscription of the third century in which mention is made of a Gaur Brahman (see page 83) entirely upsets the theory that the Gaurs came from Bengal, as at that time the name of Gaur was unknown there. There can be little doubt that the Bengālī Gaurs are the descendants of immigrants from these provinces like the Kāyaths. The Gaurs proper deny that the Tagas belong to their division, and put them in the same class as the Bhūinhārs further south, as almost outside the pale of Brahmanism. The many calls upon my attention must be my excuse for leaving this and other interesting questions unsifted, which, however valuable for ethnological purposes, are somewhat removed from the objects of practical utility, steadily kept in view by me in preparing the present work.

The different clans of Rajpúts found at the census in 1872, with their numbers, are given below. It will be seen that Chauháns, Rajpúts, Gahlots, and Tuárs alone include nearly two-thirds of the Hindús classed under this head:—

Badgújar, ...	1,087	Dor, ...	107	Janwar, ...	11	Purabiya, ...	18
Bais, ...	73	Dikshit, ...	16	Jhatiyána, ...	15	Rahlor, ...	110
Bhál, ...	4,739	Dáhima, ...	624	Kachhwáha, ...	1,680	Raghubansi, ...	180
Báchhal, ...	24	Dilwat, ...	49	Kinwar, ...	9	Rána, ...	213
Bargiyan, ...	10	Gargbansi, ...	15	Kachhaura, ...	425	Ráwat, ...	23
Bhitta, ...	66	Gahlot, ...	10,322	Kasyapa, ...	13	Surajbansi, ...	51
Bishn, ...	124	Gaur, ...	203	Ladwa, ...	103	Solankhi, ...	380
Bhavadhváj, ...	18	Gabarwár, ...	500	Mina, ...	3	Sisodiya, ...	558
Bhatti, ...	39	Gautam, ...	5	Mohil, ...	57	Sombansi, ...	801
Bhimala, ...	210	Han, ...	86	Mohrawar, ...	241	Sangjál, ...	44
Chauhán, ...	17,207	Hanumán, ...	129	Nirbán, ...	71	Sanghawát, ...	9
Chandel, ...	29	Jaiswár, ...	15	Nirmal, ...	16	Tuár, ...	11,698
Chamargaur, ...	80	Janghára, ...	205	Panwár, ...	1,159	Tanak, ...	62
Dhengar, ...	272	Jádón, ...	323	Pandir, ...	340	Tamota, ...	17

Besides these tribes 269 persons were classed amongst Rajpúts without any specification. The Rajpúts form but 5·6 per cent. of the total Hindu population in this district. Like the Brahmans, this list includes a number of mere *gotras* and titles which I am unable to assign to their proper tribes.

The Hindu Rajpút clans in the district are zamindárs in 194 villages, and The Rajpúts as land-holders. Musalmán Rajpúts hold 48 villages. The largest land-holders are the Gahlots, Tuárs or Tanwárs, and Sombansi. The Gahlots were a powerful tribe in the twelfth century. One of Prithiráj's best generals was Govind Rao, a chief of this tribe, who is said to have resided at Dehra in this district. They now hold four villages in the Bágpát tahsíl, 7 in Hápur, and 27 in Gháziabad. Musalmán Gahlots hold nine villages. The Tuárs, Tanwárs or Tomars are very numerous in this district. They look on themselves as the descendants of the Pándavas, and many claim kinship with the Tomar dynasty of Dehli that was overthrown by the Chauháns. They now hold two villages in Mawána, 32 in Hápur, 12 in Meerut, and 34 in the Gháziabad tahsíl. The owners of the 32 villages in parganah Púth of the Hápur tahsíl call themselves descendants of Bahadpúl, whom they assert to have been the tenth Raja of the Tomar dynasty of Dehli, and to have founded Bhadsána which has never been deserted to this day by his posterity¹. Musalmán Tuárs possess eight villages in Hápur and three in Bágpát.

The Hindu Dor Rajpúts have but four villages, all of which are situated in the Hápur tahsíl, while their Musalmán brethren in the same tract have 16. The Dors originally held the country from Koil to Meerut, and under their leader Hardatta attained to considerable power.² It was Hardatta that built the fort of Meerut, founded Hápur, and relieved Baran by paying the ransom demanded by Mahmúd Ghaznavi. About the time of Prithiráj

¹ The name does not occur in the lists given by General Cunningham, (Arch. Sur., I., 149) or in Tieffenthaler's list. ² See the Bulandshahr district, page 84.

the power of the Dors began to wane. They were pressed by the Mína Meos on the one side, while the Gahlots expelled them from Dásna on the other. The Badgújars are another old tribe still in possession of a large number of villages in Bulandshahr. They occupied the southern portion of this district also. The chief of them here is the Sábitkháni family of Pilkua or Pilkuwa but their influence ended with Daulat Rao Singh, whose estates were sold by auction in 1815. The Nirbán or Nirbhán Rajpúts are said to have formerly been a numerous and powerful tribe in this district, but for ages all Nirbháns have been Musalmáns. They now hold only two villages in parganah Loni in tahsíl Gháziabad.

The Chauháns in this district possess zamíndáris in eleven villages. They must not be confounded with the Chauháns mentioned hereafter as a degraded Rajpút tribe, common in Rohilkhand and the upper Duáb. The Chauháns proper. They are found principally in Sardhana, where they have four villages and one each in the Hápur, Mawána, and Meerut tahsils. The Musalmán Chauháns possess four villages. Panwárs hold five villages in Sardhana and one in Bágpát; Kachhwahás have six in Sardhana and three in Bágpát; Dáhimas hold three in Bágpát. Sombansis possess 24 villages in Sardhana, where Bhandars have three. Dols have but one village in Bágpát. Samáls have three villages, Ladwas one, Makhlá-chhas one, Hindu Báchhals six, Musalmán Báchhals one, and Musalmán Panwárs three villages in the Meerut tahsíl. Musalmán Bhattis have four villages in the Hápur tahsíl. Bagarmals have two, Surhas three, and Gaurs three villages in the Gháziabad tahsíl. The Jhatiyáns are found in parganahs Sardhana and Bágpát.

The Baniyas of Meerut chiefly belong to the Agarwál and Saraugi divisions, and comprise 7·1 per cent. of the entire Hindu population. There were 44,255 Agarwáls in 1872, 13,271 Saraugis, 5,702 Gindatriyas, 1,796 Bishnois, 1,684 Rastaugis, 1,046 of the Mahesri subdivision, 811 of the Raja-ke-Barádari, 261 Rautgis, and 28 Khandelwals or Kándhlawals. As might be expected, they form an important portion of the landholders in this district, being zamíndárs of 136 villages. The Báu-sals hold 30 villages, of which 21 lie in the Gháziabad tahsíl. The Sangals have 26 villages, chiefly in Mawána. The Rautgis or Rohtagis have five villages; the Garg clans hold 53 villages, of which 39 are situated in the Meerut tahsíl; the Maithils have 3; Sarwariyas, 1; Sandel, 1; Kansal, 2; Pápariya, 1, Raja-ke-Barádari, 13, Gotal, 5, Gargas 5, and Totral, 1. Of these villages 7 are situated in the Bágpát tahsíl, 39 in Mawána, 3 in Sardhana, 15 in Hápur, 58 in Meerut, and 21 in Gháziabad. The Agarwáls are said to derive their name from the town of Agaroha on the borders of the Hariána District, whence they emigrated after its capture by Muhammad Sáim. The Bishnois are a peculiar sect of Hindús found there and in the neighbouring districts of Rohilkhand; they are more particularly noticed hereafter.

The great mass of the population belongs to the classes included under the head "other castes" at the recent census, which then numbered 756,447 souls, or 76·2 per cent. of the entire

Other castes.
Hindú population. They belong to the following tribes:—

Agari, ...	433	Kori, ...	11,793
Ahár, ...	273	Kumhár, ...	23,870
Ahír, ...	17,291	Kurmi, ...	1,213
Baheliya, ...	1,314	Kuzagar, ...	48
Banbatn, ...	72	Lodha, ...	7,157
Banjára, ...	255	Lohár, ...	4,662
Bansphor, ...	17	Mimnár, ...	298
Barhal, ...	12,166	Máli, ...	17,223
Bárl, ...	83	Malláh, ...	978
Beidár, ...	30	Munihár, ...	233
Bharbhúnja, ...	2,905	Mochi, ...	87
Bhat, ...	62	Nat, ...	1,175
Bhora, ...	104	Náik, ...	75
Chál, ...	134	Núniya, ...	137
Chamár, ...	197,273	Oh, ...	6,327
Chhípi, ...	3,401	Pást, ...	408
Darzi, ...	782	Pitahra, ...	203
Dhának, ...	1,570	Rahí, ...	372
Dhobi, ...	1,821	Ráin, ...	4
Dhúna, ...	1,942	Ramaliya, ...	102
Dom, ...	23	Rangrez, ...	169
Dusádh, ...	60	Rawa, ...	3,299
Gadhela, ...	70	Riwarí, ...	52
Garariya, ...	14,171	Sáisi, ...	637
Ghosi, ...	666	Saikalgar, ...	39
Gójar, ...	60,350	Sáni, ...	5,873
Hajjám, ...	19,359	Shoragar, ...	73
Halwái, ...	58	Sonár, ...	7,503
Ját, ...	145,514	Tagu, ...	43,062
Jotahi, ...	31	Tamoli, ...	281
Juláha, ...	10,698	Tawáif, ...	42
Káchhi, ...	423	Teli, ...	966
Kahár, ...	35,985	Thathera, ...	30
Kalwár, ...	2,093	Vaishnu, ...	182
Kamboh, ...	743	Bairági, ...	3,913
Kanjar, ...	651	Barwa, ...	82
Kánpri, ...	63	Bakír, ...	604
Káyath, ...	3,740	Gosháin, ...	5,825
Khági, ...	715	Jogi, ...	11,292
Khákrob, ...	50,107	Sádh, ...	407
Khatik, ...	6,025	Bangáli, ...	146
Khattiri, ...	1,880	Unspecified, ...	1,661

The Játés are the most important and most industrious of all the cultivators not only in this district but in the entire Meerut division. As proprietors they hold zamindáris in 488 villages, and altogether have influenced the character of Meerut more than any other caste. In the Duáb they are divided into two great classes—the Hele and the Dhe, corresponding to the Pachháde and Deswale of Rohilkhand and Dehli. The Hele subdivision is by far the most numerous in this district. Heles are found in every parganah. The Dhes occupy several villages in the neighbourhood of Bábhúgarh and Hápur as Bachota; in the Sardhana tahsil they hold Chabariya, and in Meerut, Zainpur and other villages in its neighbourhood. The Heles and Dhes do not intermarry. The Heles profess a great contempt for the Dhes, apparently on the ground that the latter smoke, tako food and

drink with Nais. The Dhes, too, are followers for the most part of Nának Sháh, and call themselves Sikhs, though their usages do not in many respects correspond. The Dhes are in fact a later colony, and in their efforts to provide for themselves have interfered with the comfort of their Hele brethren, who appear to have arrived in the district at a very early date. They all say that they came here from Jaisalmer about 1,100 years ago, and this may be considered as a very close approximation to the truth. They first settled in the north-west corner and drove out the Tagas from Chhaprauli, Kutána, and Baraut, and gradually extended their possessions throughout the whole district.

The most numerous clans of the Játs in this district are the Salaklám, Saráwat, Dalál, Jhar, Dewate, Nabri, and Suranj. The Játs as landowners. Salaklám hold 52 villages in Bágpát and 16 in Saradhana; the Saráwats have 20 villages, of which 12 are in Gháziabad, five in Mawána, and two in Bágpát. The Dakáls hold 36 villages in the Hápur tahsil and two elsewhere. The Jhars have 16 villages in Hápur and 14 in Mawána. The Dewates possess 26 villages in the south and east; the Nahrís 18 in Gháziabad; the Suranj clan hold 17 in the Meerut tahsil, and the Khokhars have 14 villages in Bágpát. The remaining clans, with the number of villages they hold are as follows:—

Dánkar, ...	13	Khadu, ...	1	Sahlot, ...	3
Dankar, ...	8	Bhogád, ...	3	Karbar, ...	1
Ghatwála, ...	3	Ujlán, ...	3	Bakín, ...	1
Panwár, ...	13	Kakrán, ...	4	Khebon, ...	1
Dholan, ...	1	Jákhar, ...	1	Chalsat, ...	7
Kondu, ...	2	Ponra, ...	3	Pabariya, ...	1
Lánkra, ...	2	Ahláwat, ...	9	Sálagwán, ...	1
Mán, ...	2	Jarúca, ...	1	Dair, ...	6
Nain, ...	6	Bhágri, ...	3	Nauláya, ...	1
Chakára, ...	4	Tahala, ...	3	Birwál, ...	1
Saroha, ...	3	Barhán, ...	2	Chábul, ...	1
Puniya, ...	7	Kájlí, ...	2	Gotál, ...	1
Hari, ...	2	Kulkul, ...	3	Moras, ...	1
Során, ...	4	Ganthwára, ...	1	Jábar, ...	1
Dháká, ...	9	Mahájal, ...	1	Bola, ...	1
Láhima, ...	14	Bási, ...	1	Bahál, ...	2
Bhara, ...	2	Sadheri, ...	2	Dandán, ...	4
Malak, ...	11	Jangála, ...	1	Kámbar, ...	1
Udiáyan, ...	3	Saláhu, ...	4	Sabháran, ...	4
Garak, ...	1	Dhalwán, ...	6	Konta, ...	1
Bora, ...	4	Siláb, ...	2	Bhatlyán, ...	2
Kharkhar, ...	1	Mandhar, ...	1	Soraj, ...	3
Kachhwáha, ...	1	Rodwál, ...	1	Dhángi, ...	1
Dúdwal, ...	1	Tahilar, ...	4	Haleraha, ...	1
Káli, ...	6	Galiya, ...	4	Masúli, ...	2
Ghanghas, ...	6	Bhainsla, ...	4	Baja, ...	1
Kandrāyan, ...	2	Mohariya, ...	2	Cháklán, ...	1
Mávi, ...	1	Sebak, ...	1	Májra, ...	1

Amongst these 92 names there are several taken from clans of Rajpúts, such as Dánkar, Panwár, Láhima, Kachhwáha, Bágri, &c., others from names of places or persons, while the name Jangála reminds us of the Mlechcha tribe of that name in the Pauránik geography. Of the villages given above, 151 are

situated in the Bāgpat tahsíl, 49 in Mawána, 37 in Sardhana, 105 in Hápúr, 86 in Meerut, and 60 in the Gháziabad tahsíl; total 488.

There is no tribe in these provinces whose history has given rise to more conjecture than the Játs.¹ According to their own History. account they are the descendants of the marriage of Rajpúts with women of an inferior class, and in this manner they account for the names of the Rajpút tribes amongst their own clans. The local story makes the Játs of Meerut the descendants of one Jaswant Singh. Others derive the name from the *játa* or hair of Mahádeo, or that they are the descendants of the great Jádu race. Those who do not regard themselves as natives of India trace their origin to the north-west, and give Garh-gajni or Ghazni as their old abode, which may be Ghazni in Afghanistan, or the old city of Gajnipur near Rawal Pindi. In the Panjab the Játs form nearly one-half the population of the various duábs from the foot of the hills down to Multán, and nearly four-tenths of the entire population. West of the Ravi they are nearly all Musalmáns. In Bharatpur (Bhurtpore) and Biána the Játs are also numerous, and here the Hindu section point to Kandahar as their parent country, while the Musalmáns adhere to Garh-gajni. General Cunningham identifies them with the Xanthii of Strabo and the Iatii of Pliny, and derives their origin from the country of Zotale on the Oxus. He places them in the end of the seventh century in Sindh, and identifies them with the Zaths, who plundered the army of Mahmúd on their return from Somnáth. Though there is a strong presumption that the Seythian Iatii of the classical writers are identical with the Zaths of the early Musalmán histories, and that the latter are the ancestors of the Játs of the present day, yet many authorities lean to the account given of their origin by the Játs themselves, that they are the offspring of mixed marriages, and of Aryan, not Turanian, descent².

A degraded Rajpút tribe calling themselves Chauháns are found in the Duáb and Rohilkhand. They hold eighteen villages chiefly in the Bāgpat, Meerut, and Gháziabad tahsíls. Chauháns. They are not regarded as Kshatriyas, and do not intermarry with Rajpút clans. They stand in the same relation to Kshatriyas as the Játs and Gújars, and in common with the Játs, *kardo* (or concubinage) is lawful amongst them, and the

¹ See Beames' Elliot, I., 130; Cunningham Arch. Sur., II, 3, 63; Lassen's Bactrian Coins. They are identical with the Jats [Juts] of the Panjab.

² It is impossible to follow up these speculations here, or to enter into a discussion as to the connection of the Játs with the Massa Geta or great Getae and Sakæ Seythians, who were essentially the same as the Dah (Dhe?) Seythians, all of which belonged to the great tribe of Sur or Abars. The reference to General Cunningham's, Lassen's, and Sir H. Elliot's works contain most of the arguments on both sides of the question. The Játs undoubtedly entered the upper Duáb from the Panjab; the Hæles probably about the tenth to the twelfth centuries, and the Dhæ within the last 150 years.

offspring of such connection is legitimate. Their principal *gotras* are Antal, Kachhwála, Chanhán, Tanwár, Bariyán, Lakha, Mahadwár, Makhláchha, and Bahal. Six of the twelve Káyath *gotras* are represented in this district: the

Káyaths. Máthur, Bhatnagar, Sribástab, Kulsreshtha, Saksena and Anvashta. They are, however, of little importance

either for intelligence, wealth, or numbers. The Kulsreshtha clan holds 15 villages.

The Gújars are more numerous in this district than in any other in these

Gújars. Provinces, numbering 60,350 souls. Next comes Saháranpur, Bulandshahr, and Muzaffarnagar. In Rohilkhand they number over 10,000 in the Moradabad and Bareilly districts. They

appear again in strength in Agra and Jalaun, and have a considerable colony in the jungle tracts of Mirzapur. Altogether they number over a quarter of a million in these Provinces. In the Panjab they are chiefly Musalmáns. The Gújars are of very unsettled habits, and much given to cattle-lifting and a life of plunder. Their favourite home in this district is in the jungle tracts in the *khádírs* of the Jumna, Hindan and Ganges, where the rough, uncultivated wastes afford them good pasturage for their cattle. During the latter half of the past century and the first quarter of the present century there were several powerful Gújar chiefs in this district, but their possessions have been much reduced during the old settlements. Their most influential clans are the Bainsla, Kasana, Máwi, Bágri, and Dede. At the end of the last century Jit Singh, Gújar of Paríohhatgarh, was one of the most powerful Hindu chieftains in the district. In the time of Raja Guláb Singh Bahsúma became the head-quarters of the Gújar confederacy, and continued so until the union of the Landhaura and Bahsúma estates. The Gújars have zamíndári possessions in 209 villages. The Bainsla clan hold 16 villages, Kasana, 15; Khobra, 16; Máwi, 30; Bágri, 34; Dede, 20; Morhal, Boswál, and Motli, 5 each; Karána, 4; Dáhima, Hon, Bháli, and Jobar clans, 3 each; the Kluúbar, Adhána, Táabri, Múndán, Badhána, Gotár, Máhila, Goli, Chandela, Bhadána, Culiokar, and Chatrána, two each, and the Bhadrána, Dhaudel, Sarsat, Chander, Magori, Jindhár, Kahári, Yona, Tongar, Dála, Bhadára, Rúthi, Pilwán, Mámri, Bapau, Rajwán, Tanwar, Sarúlna, Dahra, Sukal, Ráhtor, Búsarti, and Kalsiya clans one village each. The increase of cultivation in the Gújar villages through which the canal passes has been a subject of remark of late years, and with this change to agricultural life a marked improvement has taken place in their character. It is said of those inhabiting the upper slope of the Jumna that "they have improved fifty per cent. since the mutiny." Their character is now very different from that of their brethren in the lower valley, who still adhere to their hereditary occupation of cattle-lifting. This habit is much fostered by the unsteadiness arising from their profession of grazier. Of the villages mentioned above, 12 are situated in the Bágpat tahsíl, 81 in Mawána, 6 in Sardhana, 23 in Hápur, 31 in Meerut,

and 56 in Gháziabad ; total, 209. The Gújars and their history have been noticed under the Saláranpur district.

The Taga tribe is one of the most numerous in this district, and is confined to the Sabáranpur, Muzaffarnagar, Bulandshahr, Morad-
 Tagas. abad, and Meerut districts. A few scattered members are found in other districts, but they are inconsiderable in both numbers and importance. Their most powerful clans are the Mitwál, Gaur, Dikhit, Pásbán, Maheshwára, Delán, and Sándlas. In Bágpát there is a tribe of Tagas, called Chúlát or Chúla, who are said to have come from Cháta or Chára, on the eastern borders of Bikánír ; a well known division of Tagas is into Bísá or full caste, and Dásá or half caste. The Dásas, entered separately in the list to the number of 574, probably belong to the latter division, in which the marriage of widows is allowed. The name Taga is said to be derived from the words "*tyá-g-dena*," "to give up." One story has it that in the reign of Parikshit, king of Hastinápúr, the snakes attacked the city, and notwithstanding that Parikshit retired into the middle of the Ganges to avoid them he was bitten and died. His son Janamejaya resolved on the extirpation of the great snake race and summoned Brahmins from all quarters to aid him. Amongst these the Tagas, who also call themselves Gaur Tagas, came in great numbers from the south, probably from Gonda, in Ondh. Preparations were made for a great *hom* or sacrifice, and all the Nágas were slaughtered except Takshak and Vásuki, who were saved at the intervention of a Brahman. In reward for their aid on this occasion the Raja bestowed on each of the Brahmins present a grant of a village within the *pán* leaf distributed with *atr* at the close of the ceremony, so that they became cultivators of the soil and gave up their position as Brahmins. Those who refused the grant and continued Brahmins retired to Hariána, whilst the Tagas settled down about Hastinápúr, whence they emigrated and took possession of the neighbouring parganahs. With few exceptions, all the Tagas in this district claim descent from the Gaur Brahmins. Another legend makes them descendants of one Iswar Bhát, by a prostitute, in the reign of the same Raja, but the traditions of all tribes in the district declare them to be the degenerate descendants of a Brahman stock, who were in possession of the district as cultivators long before the arrival of the Játs from the west. Retreating before the Játs and Gújars, the Tagas abandoned the north-western parganahs where those warlike tribes first settled, and are now chiefly found in the parganahs to the south of the district. The Hindú Tagas are zamíndárs in 289 villages. The Mitwál *gotra* hold 46 villages in tahsíl Gházi-
 Taga landowners. abad, the Dikhits have 19 in the same tahsíl, and the Gaur 11 ; the Pásbáns possess 55 villages and the Deláns 18 in the Hápúr tahsíl, and the Sándlas have 22 villages, chiefly in the Sardhana tahsíl. The Maheshwáras have 12 villages, all but one lying in the

Mawána tahsíl, and the Kausik clan possess 11 villages in Bágpát. The remaining clans of Hindu Tagas, with the number of villages they occupy, are as follows :—

Dichit,	1	Gúrpu	2
Basyán,	3	Vasishit,	4
Sarsút,	11	Kángarán,	1
Karas,	1	Bachhas,	5
Bhanwál,	1	Bháranddhvaj,	6
Bhátí,	3	Kashab,	7
Gújara,	3	Matras,	4
Atras,	2	Bhand,	2
Tongar,	6	Bhártdwári,	5
Galsan,	7	Arlas,	2
Bhansant,	1	Dahlán,	6
Dhakwán,	1		

Of these 43 are situated in the Bágpát tahsíl, 31 in Mawána, 23 in Sardhana, 94 in Hápur, 10 in Meerut, and 88 in the Gháziabad tahsíl. Musalmán Tagas hold 46 villages. The Bainsán *gotra* have two and the Basyáns four villages in Gháziabad, and the latter one also in Mawána. The Maheshwára possess 21 villages in Mawána and 7 in Hápur, where also the Musalmán Galsans have two and the Musalmán Pásbáns four villages. Neither the Hindu nor the Musalmán Tagas are good cultivators, but it is said that their condition in this respect is improving, and when brought into competition with the Játs they improve by the example shown them.

The Ahírs are for the most part found in the Bágpát tahsíl. Sir H. M. Elliot writes :—“The only districts which in the *Ain-i-Akbari* are said to have Ahír zamíndárs are Nagína and Sardhana.” At the present time there is not a single Ahír zamíndár in the Sardhana tahsíl. Among the Ahírs in this district the Deswáls of Bágpát are the most numerous, holding 15 villages out of the 44 possessed by the tribe. The Bhádána and Dogri clans hold two each; the Náhariya five; the Satariya and Karoya four each, and the Jarwál, Bhalol, Ládhí, Jariya, Dáhima, Karwa, Chúsba, Bariyán, Buhániya, Bhalán, Tanwar and Jútbáya clans, one village each. There are 23 villages in the Bágpát tahsíl, 8 in Mawána, 5 in Meerut, and 8 in the Gháziabad tahsíl; total, 44. The Ahírs are widely spread all over these provinces, and are in a position somewhat similar to that of the Gújars and Játs. Some connect them with the Abhiri of Ptolemy.

The Musalmán Mewátis or Meos are not mentioned in the census of 1872.

Mewátis or Meos. They hold two villages in the Hápur tahsíl. The Dhagal clan of Hindu Meos also hold one village in the Gháziabad tahsíl. In earlier times they were a very powerful tribe in the northern Duáb. It was in a great measure due to their exertions that the Gahlots succeeded in dislodging the Dors from Bulandshahr and the south of Meerut. In return the Meos were permitted to appropriate large estates in the conquered country. They were, however, always turbulent and unmanageable, and are

frequently mentioned by the Persian historians. As early as 1241 A.D. they gave considerable trouble to the Musalmán rulers of Dehli. In that year we read in the *Tabakát-i-Nasiri*, that Ulugh Khán¹ inflicted a severe chastisement "on the Mawás of the Duáb between the Ganges and the Jumna. He fought much against the infidels and cleared the roads and neighbouring country from insurgents." A similar expedition was organized in 1249 A.D., and in 1259 Ulugh Khán exercised his horsemen by making war upon the Mawás while awaiting the attack of the Mughals from the west. For a long time the Meos remained in peace until the accession of Ghaiyas-ud-dín Balban in 1265 A.D., who employed himself in harrying the jungles in which they concealed themselves. The historian Zia-ud-dín Barni writes that the turbulence of the Mewátis had increased to such an extent that they used to plunder the houses in the immediate neighbourhood of Dehli itself. To such a pitch had their daring extended that it was found necessary to close the western gates of the city at afternoon prayer. The Sultan spent a whole year in his expeditions against them, and built forts and posts to protect the city from their incursions. In this campaign 100,000 of the royal army were slain by the Mewátis according to Barni, but more probably the same number of the enemy were slain as Firishta says. In the reign of Fíroz Sháh the tracts occupied by the Meos in the Duáb were known as Mawás, and from their wild and rugged character the word occasionally became synonymous with a fastness or place of strength. Thus we read² that Malik Chhaju, on his defeat by the royal forces, escaped into a Mawás; again the defeated army of Aín-ul-mulk "fell into the hands of the Hindús of the Mawás." In both these cases, referring as they do to the Duáb, the tracts occupied by the Meos appear to me to be intended. In 1426 A.D. also we read that Mubárák Sháh crossed the Jumna and "attacked the village of Harauli, one of the well-known places in Mawás." The expedition of Balban is not forgotten in this district, and to it is attributed the expulsion of the Meos from Meerut. They are now to be chiefly found in Bulandshahr, Aligarh, and Budaun, and still bear the same character for violence and love of plunder that seems to have adhered to them from their earliest days. They are the principal dakaits of the present day not only in our own Provinces but all through Rajpútána.

The Gaddis or Gadhis or Gadablas are a small tribe resembling the Ghosís, and for the most part Musalmáns. They have a few scattered communities in Garhmuktesar, Saráwa, Hastinápur, Kithor, and Meerut. They are zamíndárs of six villages, of which four

¹ Dowson's Elliot, II, 362. Professor Dowson seems to be in some difficulty as to the meaning of the term Mawás, but it can only refer to the Meos, whose power at this time is sufficiently clear from local history. See further II, 379: III, 104, 138, 249, and IV, 63.

² Dowson's Elliot, III, 138, 249.

are in parganah Meerut, one in parganah Hastinápúr, and one in Saráwa. The Hindu Kambos of the Chaupár clan have two villages in the Meerut tahsíl, and the Musalmán Kambos possess eleven villages, of which five are in Gháziabad, three in Meerut, two in Sardhana, and one in the Mawána tahsíl. The Rawas hold 17 villages in this district distributed among the following *gots*:—Lepán, 1; Során, 1; Káliyán, 1; Kánra, 2; Yona, 5; Deswál, 1; Chaulán, 5, and Bágri, 1. Six of these are situated in the Bágpat tahsíl, six in Sardhana, and one in Meerut. Bohras or Bhoras hold four villages in Bágpat, of which two belong to the Bokal clan and two to the Párásar clan. The Báhal clan of Khattris hold five villages in Gháziabad; the Mahár clan of Kabáras possess two villages; the Nángal clan of Málís, five villages; the Rodarbáni clan of Gosháíns, two villages; Giri Gosháíns, three; Nánaksháhi Gosháíns, two; and Charandási Gosháíns, two villages.

The Muhammadans number 281,857 souls, of whom 134,101 are females. They are divided into Shaikhs, numbering 181,106, with 86,137 females; Sayyids, 7,729; Mughals, 2,366; Patháns, 19,117 (9,307 females), and unspecified 71,539 (33,670 females). The Shaikhs of the Meerut district divide themselves into seven classes:—(1) Sadíki, the descendants of Abu Bakr; (2) Farrúkhi, descendants of Umar; (3) Usmání, descendants of Usmán; (4) Mardáni, descendants of Muhammad; (5) Answári, the same; (6) Nabi, the same; and (7) Kuraishi, considered the highest of the seven classes. It need hardly be said that the great mass of the Shaikhs are descendants of converted Hindús. The Shaikhs possess 49 villages; the Afgháns and Mughals hold 42; Sayyids, 119; Mírs, 7; Bilúchs, 5; and Kasábs, 1. These are in addition to those already noted as in the hands of Nau-muslims and the Musalmán divisions of Hindú tribes. Altogether 337 villages are held by Musalmáns in this district. The first application of the term Nau-muslim was to the Mughal converts who remained about Dehli after the departure of Abdallah, grandson of Huláku, in 1292 A.D.

Amongst the non-Asiatic inhabitants, the last census showed that 942 natives of Great Britain resided in the Meerut district. There were 8 French, 3 German, 6 Italian, 11 Portuguese, 3 Swiss, and 1,176 European inhabitants whose nationality was not specified; total Europeans 2,149. The Eurasian inhabitants numbered 142 souls. Amongst foreign Asiatic nations residing in the district were 18 Afgháns, 3 Armenians, 23 Kashmírís, and 25 Nepalese. Amongst landholders, Englishmen hold 24 villages in the Gháziabad tahsíl, three in Mawána, and one in Bágpat; Frenchmen hold five villages in Bágpat, and an Arab has one in Sardhana.

The following statement shows the distribution of the population per each cultivated square mile and the proportion of the principal castes in each parganah of the district.

The Chamárs form the great mass of the labouring population in every parganah, and in the whole Province number one-eighth of the entire population, being found in large numbers in every district :—

Parganah.	Cultivated area in square miles.	Distribution of the principal castes per cultivated square mile.						Total.
		Rajpúts.	Tugus.	Játs.	Chamárs.	Gújars.	Other castes.	
Bágpát, ...	154	30	30	81	78	53	430	702
Baraut, ...	62	1	8	236	110	12	540	907
Chhaprauli, ...	45	5	...	245	96	12	490	844
Kutána, ...	56	4	15	243	86	...	476	824
Loni, ...	97	26	46	21	114	101	373	681
Barnáwa, ...	79	3	4	213	94	20	488	822
Meerut, ...	260	36	9	93	179	38	700	1,055
Dáona, ...	97	129	8	38	120	14	528	837
Jalálabad, ...	144	11	73	99	108	23	419	733
Ilápura, ...	122	36	31	80	145	33	468	793
Sardhana, ...	104	80	33	64	94	2	515	788
Garhmuktesar, ...	69	25	26	42	129	32	425	679
Saráwa, ...	56	13	94	13	117	37	386	605
Púth, ...	38	138	...	24	102	5	367	636
Hastinápúr, ...	121	23	8	57	138	74	322	622
Kithor, ...	126	5	25	34	166	57	329	556
Total, ...	1,630	34	26	89	121	37	474	781

Perhaps no more important facts can be gleaned from the recent census than those relating to the occupation of the people. The

Occupations.

broad distinction of agriculturists and non-agriculturists has always been observed in all the enumerations that have taken place in this district. In 1847 the proportion of the population engaged in agriculture was given as 392,109 souls, or 45 per cent., of the total population : in 1853 the records show 510,135 souls, or 45 per cent., and in 1865 the numbers were 521,890, or 43 per cent. of the total population. The census of 1872 on this point is more explicit and gives materials from which a correct idea of the occupations of the 1,273,914 souls inhabiting this district may be obtained. Taking the same broad distinction, we have in 1872 an agricultural

Agriculturists.

population numbering 537,230 persons, or 42·2 per cent. of the total population. Of these 445,700 were Hindús, or 35 per cent. of the entire population, and 91,414 were Musalmáns, or 7·2 per cent. Divided into the two classes of landowners and cultivators, the census

shows 232,583 (104,860 females) under the former class and 324,647 (136,455) under the latter class. The Hindú landowners numbered 106,182 males and 84,623 females, while the Musalmáns showed 21,539 males and 20,237 females. The Musalmán cultivators are set down at 49,638 (23,474 females). On the total agricultural population the male adults (above fifteen years of age) number 184,916, consisting of proprietors of land, 79,203; cultivators, 105,258; ploughmen, 247; gardeners, 107; singhára-growers, 47; and indigo-planters, 46. To complete the return of those dependant upon the land, as distinguished from other occupations, we should add to the above 3,269 persons engaged about animals, and one-half the 58,656 males recorded as labourers, which would give a total of 217,513 adult males out of the district total of 428,682, or a little over one-half.

The agricultural comprises but one of the six classes into which the population was divided at the recent census. Taking the remainder in order, and remembering that the figures refer only to male adults, the following facts may be gleaned. The first or professional class numbers 10,319 members, amongst whom are classed Government servants; the learned professions, art, &c., as family priests (6,217), pandits (645), school-masters (227), druggists (159), doctors (232), singers and musicians (392). The second or domestic class comprises 53,457 males engaged in entertaining and performing personal offices for men, such as iun-keepers, personal servants (24,150), washermen, cooks, table-attendants, water-carriers (7,476), and sweepers (13,475). The third or commercial class gives 36,078 males, and includes all persons who buy or sell, keep or lend money or goods of various kinds, as merchants (1,430), shop-keepers (17,043), money-lenders (3,491), and the like; also persons engaged in the conveyance of men, animals and goods, as porters (8,850), coolies (1,584), ekka-drivers (281), &c. The fourth class is the agricultural already noticed. The fifth class numbers 67,761 males and embraces all industrial occupations, including those engaged in arts and mechanics, as painters (471), patwas or necklace-makers (220), saddlers (309), masons (693), carpenters (4,281), weavers (16,676), tailors (3,471), shoe-makers (3,842), &c.; all persons engaged in the manufacture of food and drink, as grain-parchers (1,167), confectioners (750), green-grocers (962), butchers (948), &c., and all dealers in animal, vegetable, or mineral substances. In the sixth and last class the indefinite and unproductive classes are arranged. They number 72,882 males amongst whom 58,656 are set down as labourers and 1,222 as excavators: beggars number 11,986, and form the greater portion of the class supported by the community at large. The population is essentially rural. There are only fifteen towns having a population exceeding 5,000 inhabitants, and the different non-agricultural classes are chiefly found in the villages in the interior of the district.

The *panch* or local indigenous tribunal is hereditary, and, as a rule, new men are never admitted except when the hereditary ones are notoriously unfit for the duty. The new members are always men of wealth and influence. Pancháyats are held on private affairs, such as caste, family customs, relationship, private quarrels, and not unfrequently for the decision of criminal cases. The Nái or barber is employed to summon the parties, and when all are assembled the president (*sar-panch*) or umpire is appointed. The complainant first tells his story, and after that the defendant replies. Then the decision is given in accordance with the votes of the majority. In cases of want of unanimity the decision is sometimes put off from time to time. In villages these pancháyats sit in the *chaurádl*, and in cities in *mandirs* and *shiwálas* (temples). Sometimes among the lower classes, on annual holidays, the people put in their complaints, and the assembled members of their caste decide the case. A frequent punishment inflicted by a pancháyat is expulsion from caste (*jíti jī ka maut*). A Chaudhri or head of a

Chaudhris.

trade or profession was formerly appointed by Government, but this practice has long ceased to be followed.

The people now choose their own Chaudhris, and the post is usually hereditary. Frequently, however, in cases of great dissatisfaction the Chaudhris are displaced and new ones elected. Sometimes Chaudhris are found useful in emergencies when the Government requires certain work performed, but they are never able to collect many people together from their trades without pressure from some Government official. Privately the Chaudhris decide the disputes that arise in their own *barádari* or guild, as at weddings, mournings, and when a member has so committed himself that he ought to be ejected from his caste. In large bazars the chief officer is called *chauráyat*; he stands with regard to the shopkeepers in the same position as a Chaudhri in relation to a trade. In large bazars, too, the weighmen are important personages, and have as perquisite a pice in the rupee on all grain sold (*tolá*). In cities where many Brahmans live, as in Meerut, they form themselves into parties called *thuras*, each of which is presided over by a *sirdár*, who performs the same duties as a Chaudhri.

Labourers in this district take food usually but twice a day, once in the early

Food of the lower classes.

morning and again in the evening. Their food is generally maize, *bajra*, *jodr*, and barley, and when wheat is cheap that also. From a half to two-thirds of a ser is considered a fair meal for an able-bodied man. Petty traders eat similar food, using more wheat the better their circumstances, and by the addition of *ddl* (split pulse) making up various dishes. The average price of barley is 26 sers per rupee, of maize 35 sers, of *bajra* 34 sers, of *jodr* 36 sers, while the average price of *ddl* is three quarters of an anna the ser. The higher and well-to-do middle classes make gram, rice and wheat their chief food, seasoning their dishes with *ghí* (clarified

butter), spices, turmeric, &c. Two of the most favourite dishes amongst the middle classes are *kachauri*, compounded of *urd dāl* and fine flour, and *khichri*, which is a seasoned dish of *mung dāl*, *bājra* and other grains boiled with rice. Fish are eaten by the lower classes everywhere among Hindūs. Brahmans, Jāts, Gújars, and Baniyas (orthodox and Jains), however, do not eat fish. Among the better classes this article of food is consumed by Káyaths and Bengális; Europeans and Musalmáns too are large consumers. In the early part of the hot weather large quantities of cucumbers (*kachra*) and melons (*tarbuza* or water-melon, and *kharbuza* or musk-melon) are consumed by all classes. In villages younggram and mustard leaves are eaten, and potatoes everywhere by the well-to-do classes. The *sankúkra*, or fruit of the *san* plant, is a favourite vegetable; so also carrots (*gújar* or *zardak*), and among the wealthy classes the *kanwal-kakri*, or root of the lotus. European vegetables are gaining ground and are now found growing in the neighbourhood of most large towns. In the Bágpat tahsíl, even so far removed from the residence of Europeans, 55 acres of onions were grown in 1871. Among the grains eaten by the lower castes, especially Kahárs, are *sanwak* and *pusáí*, which grow spontaneously, and *mandwa*, a very cheap grain.

In villages houses are very rudely constructed. As a rule *gá-d* (mortar) or *gonda* (moistened earth) are piled up in the shape of walls and plastered outside and inside with a composition of cow-dung and earth mixed. Beams are thrown over and a straw roof laid on. This is a house or *ghar*, and some four or five *ghars* formed into a court are the *ihátah* or enclosure. According to the size of the houses there are the *dálán*, *kothu*, *kothri* (or store-room), and *dobári*. In villages the *kotha* generally has two *kothris*, and the verandah with its *chhappar* or straw roof is called the *dálán*. In towns the *dálán* is usually a large room with some two, three, or four doors. The size of a village house varies considerably, but the average dimensions are 20 feet by 10 feet, and on an average nine persons live in one *ihátah*. The upper classes in town and country build their houses of brick and mortar, and they generally have eight or nine rooms. As a rule, in villages, one family lives in one room (*kotha*.) The gate or door of the *ihátah* is called *deorhi*, and usually in front of this is built a small *chabútra* (or platform) corrupted in village parlance to *chauntra*. Here the inhabitants of the *ihátah* lounge and smoke. The Gújars have fewer houses in each *ihátah* than Jāts and Ahírs. Moreover, these people have not wooden doors, but only bambu gratings such as are seen in cattle-sheds, called *khiraks*. The lower castes as Chamárs and Chúhras frequently live in straw *páls* called *raotis*: this is called a *doohanna chhappar*; in many villages a whole family lives in one such hut. Occasionally a great number of these are huddled together with a courtyard in the centre, which serves the same purpose as a *chaupál* among the higher castes, and a cow-fold

as well. As compared with village houses, town houses are usually deficient in width and the courtyards are smaller. Garariyas and Nats (jugglers) usually live in huts made of the part of the *sarpat* grass called *sirki*: hence the generic name *sirkiyalog* applied to these classes. The statistics of the house enumeration have already been given. There are no buildings of any

noted architectural merit in this district. Those in the city are noticed in the article MEERUT. The Hindú temples are all small, containing the sanctuary only, which is a conical chamber scarcely lighted by one small door, at which the worshipper presents his offering and offers up his supplication. The temples are called Shiwálas, Mahádewas, and Thákurdwáras. Opposite the sanctuary door is the stone saucer, *arghu* or *jaleri*, in which the stone representing the Shiva ling called *pindi* is placed. Placed round are the *artís* or censers in which the Hindú worshippers put oil and wicks of cotton, and which they slowly move before the image while saying their prayers. This ceremony is gone through once every day by all zealous Brahmans, and on Mondays often twice, once in the morning and once in the evening. This is the end of their service, and is followed by a sermon or *katha* from the attendant pandit. Other properties laid up in the temple are the *ghanta* (large bell); the *ghuriya* (small bell); *jhanjh* (cymbals); *sank* (conch shell); *achmani* (the small spoon used in the ceremony of rinsing the mouth); the *sampati* (small vessel in which the Hindús put their offerings), which lies before the *sinhásan* or throne on which the idols recline. Suspended are the lamps (*dípak*) to lighten the sanctuary, and the *dhúpdán* (or censer) in which the incense (*dhúp*) is burnt. In the Jain or Saraúgi temples, which in this district are found inconsiderable numbers, Parasnáth is worshiped under the form of a kind of iron cross. The rest of his worship is very similar to that of Shiva. There are also a few Devi temples. Here Devi is worshipped twice a year, and fairs are held at the same time. Rice, sweetmeats, flowers, &c., are offered up, and worship continues for several days. The chief service is held in *Jeth*.

There are no settlements of the Bráhma Samáj in the district. Christian missionaries early settled here among the town and rural populations, and there are at present eight Church

Mission Stations:—

Name.	When entered upon.	Number of Native Christians.	Average attendance of pupils in school.
Meerut,	1816	264	194
Kankarkhera and Maliyána,	1858	82	54
Ikla and Gháziabad,	1862-69	83	22
Mawána and Hápur,	1864-67	...	Unoccupied,
Pilkhua,	1863	7	...

The census of 1872 gives the number of Native Christians as 730. These statements clearly show how slow the progress of Christianity has been after the unremitting labours of more than half a century. The Christians of Ikla were originally Chamárs of Aghwánpur. Why they left Aghwánpur is not quite clear. The zamíndárs point out that they were guilty of some undefined offence which necessitated their expulsion from the village. The Christians themselves say they were so persecuted that when an opportunity of settling elsewhere presented itself, they were glad to avail themselves of it, and their statement is probably correct. All the tahsildárs agree that the condition of the Native Christians has improved since the adoption of their new religion. From the condition of Chamár serfs they have become a tolerably respectable body of masons and small agriculturists. But the system that places the secular affairs of a Christian settlement under the management of the pastor has in a great measure destroyed the independence of the converts. This has been the case at Ikla. The Church Society has sent money, and the Christians, always looking upon themselves as a privileged subsidised race, have become more and more idle, failed to pay their rents, and then borrowed money at a high rate of interest. The Church Society now finds it necessary to withdraw pecuniary support, and in all probability the settlement will collapse. Connected with the Delhi Mission is the Shahdara Christian settlement. The converts there are labourers, shop-keepers, and shoe-makers. Originally they were Chamárs.

There are about 250 Native Christians at Sardhana, the descendants of those who embraced Christianity in the time of the
 Sardhana. Begam Sumru, and persons who became proselytes to Christianity during the famine of 1860-61 and 1869. The Christians were all originally low-caste Hindús, and Mr. Thornton has very unjustly held them up as a notoriously idle and profligate race. Such is not the case, for they are an orderly people and in every way infinitely superior to their own former fellow-castemen. The Roman Catholic priests work hard for their little colony, and are greatly revered and respected. At St. John's College some of the boys are instructed for the priesthood, and others taught to read and write the Nágari and Urdu characters. The instruction for the priesthood is peculiar. There are some twelve little native boys who can quote whole chapters of the Latin Bible and nearly all the prayers of the Missal. Those who cannot sympathise with the system must admire the patience and devotion of the Italian priests who have put themselves to the trouble of imparting such instruction. The majority of the Christian population here are cultivators and weavers, while many are the pensioned descendants of the European servants of Begam Sumru, and still bear the appellation of Sáhib and Mem Sáhib.

The Muhammadan religion is making no further progress among the people, and Hindú converts to Islám are now as rare as those to Christianity. The Sunnis in this district are more numerous than the Shiáhs, though the latter are a most influential minority. The sectarian hatred that exists elsewhere between these co-religionists is here little felt. Wahíbi tenets are said to be rapidly gaining ground among the Sunnis, while the Shiáhs are as yet scarcely affected by the revival. There is very little fanaticism among the Musalmáns of this district, and, as a rule, they are miserably poor. Many fine estates have within the last few years passed from Musalmáns into the hands of the Hindú money-lenders, who are fast becoming the largest landed proprietors of the district. This is much to be regretted, for as a rule Musalmán gentlemen are easy landlords and their tenantry are a contented people.

Under the Government system education is making rapid strides among the people, notwithstanding the objection to education generally professed by most of the Játs and the Musalmán dislike to the practical knowledge taught in the Government schools. The educational arrangements in this district are under the supervision of the Inspector of the 1st Circle, in concert with the Local Educational Committee, presided over by the Judge. The first step towards inaugurating a sound system of village schools was taken in 1845, by the issuing of instructions for the collection of data as to the actual state of education in these Provinces. The results of this inquiry were embodied in a report, and on this action was so far taken that a number of village schools were established in 1848. It was found that the district then contained 164 Persian, 205 Hindi, 13 Arabic, and 28 Sanskrit schools; total, 410. Of Persian schools there were 47, in which the Kurán was read; of the Hindi 22, in which Sanskrit knowledge was imparted. In one school Arabic was taught by a Rajpút, and Hindi and Persian instruction offered in another by a Brahman. Among the Persian and Arabic teachers there were 170 Muhammadans, four Brahmans, two Káyaths, and one Rajpút. Among the Hindi and Sanskrit teachers, 204 Brahmans, 5 Káyaths, 20 Muhammadans, four Jogis, and one Bairági. Of the pupils throughout the district 873 were Muhammadans, 911 Brahmans, 112 Rajpúts, and 117 Káyaths. The course of instruction in the Persian school embraced the reading of the works commonly used in native schools. In the Hindi schools it was confined to agricultural and commercial accounts. The total number of pupils in the district was but 3,798. Considering the number of male children fit for instruction to be one-twelfth of the total population, it was found that of these only five per cent. attended school.¹ The number of pupils in Government schools alone now exceeds the total number of pupils in the district in 1847-48. Working on this

¹ Thornton's Memoir, p. 34, Calcutta, 1850.

foundation the village schools rapidly increased, tahsili schools were opened in 1856, the new village schools in 1858-59, and the Meerut zila school in 1867. The last has now a fine building at its disposal, for which the Government sanctioned an expenditure of Rs. 20,000. The normal school at Meerut was opened in 1859 for training teachers for the vernacular schools of the circle, and affords a year's instruction gratis to each student. There is an aided school at Gháziabad belonging to the Dohli P. G. Society for the children of railway employes. There are also aided schools at Baraut and Hápúr, the Meerut citizens' school, which is in part supported by the municipality, and the Church Mission school. Among the well-to-do classes it is usual to entertain a private tutor for the education of the sons, and from the very mixed company met with in the Government schools it will be long before they become popular. Amongst the lowest classes of Hindús and Musalmáns there is little education, and there are few who can do more than with difficulty decipher the Nágari character. The monthly salary of a Government village, circuit, or halkahbandi teacher is Rs. 6, 9, 12, and 15, according to his grade. In 1847-48 his average pay was only Rs. 2, 3 a month.

The following tables give the educational statistics of the whole district, according to the returns of the Department of Public Instruction, for 1860-61, 1871-72, and 1874-75 :—

Class of school.		1860-61.			1871-72.								
		No. of schools.	No. of pupils.	Cost.	No. of schools.	No. of pupils.			Average daily attendance.	Cost per head.	Proportion borne by State.	Total charges.	
						Hindús.	Musalmáns.	Others.					
				Rs.						Rs. a. p.	Rs. a. p.	Rs.	
Govt.	Zila (inferior),	...	...	...	1	76	19	...	86	35 10 0	30 2 0	3,063
	Tahsili,	...	7	466	1,935	6	288	98	...	303	5 6 0	4 7 0	2,026
	Halkahbandi,	...	128	3,269	9,618	164	3,737	898	...	3,246	3 14 0	1 15 0	16,642
	Female,	...	...	...	17	200	37	...	128	3 15 0	3 15 0	701
Aided.	Anglo-vernacular,	...	...	...	4	255	48	44	257	40 0 0	16 0 0	10,494
	Vernacular,	...	...	...	2	...	...	70	59	8 0 0	2 12 0	474
	Female,	...	...	...	2	39	...	10	43	30 0 0	15 0 0	1,805
										
Unaided.	Indigenous,	...	277	3,715	11,398	163	1,550	491	...	1,906	4 5 0	...	9,244
	Govt. Normal,	...	1	127	10,409	1	40	23	...	55	150 2 0	106 4 0	9,684
Total,		...	413	7,567	33,360	360	6,185	1,714	124	6,083	53,634

Educational Returns of 1874-75.

Class of school.	Number of schools.	No. of pupils.			Average daily attendance.	Cost per head.	Proportion borne by State.	Total charges.
		Hindūs.	Musalmāns.	Others.				
						Rs. a. p.	Rs. a. p.	Rs.
Govt., {	Zila (inferior), ...	1	116	122	...	159-06	19 12 0	3,149
	Tahsil and pargana, ...	7	297	107	...	316-26	8 9 0	2,736
	Ilakhabandi, ...	189	3,980	1,197	...	3,799-02	5 1 0	19,246
	Female, ...	11	186	17	...	140-85	6 8 0	918
	Municipal, ...	11	288	93	1	286-68	7 6 0	2,142
Aided, {	Anglo-vernacular, ...	2	186	124	13	264-00	28 7 0	7,520
	Vernacular, ...	1	15	6	20	31-00	10 5 0	321
	Female, ...	2	46	...	12	42-00	34 3 0	1,438
Unaided, Indigenious, ...		191	1,978	750	...	2,315-00	5 1 0	11,734
Govt., {	Normal school, (Male), ...	1	31	31	...	54-00	191 7 0	10,338
Total, ...		416	7,123	2,447	46	7,407-87	...	59,542

In 1872 an attempt was made, for the first time, to register the literate (those who could read and write) according to sex, age, and religion. Though not to be considered trustworthy, yet as the first attempt in this direction the results must be noticed here. The following table gives the number of Hindūs and Musalmāns who can read and write, and the percentages of the same to the total population of the same religion, sex, and age. The Christian population is so small that the returns affecting it have been omitted :—

Ages.	HINDUS.						MUSALMĀNS.					
	Males.			Females.			Males.			Females.		
	Number.	Literate.	Percentage.	Number.	Literate.		Number.	Literate.	Percentage.	Number.	Literate.	
1 to 12, ...	185,131	2,479	1-3	147,149	10		51,140	708	1-3	43,888	...	
12 to 20, ...	87,489	3,467	3-9	70,240	2		23,373	646	2-7	21,146	Nil.	
Above 20 ...	264,568	14,072	5-5	236,649	5		73,243	1,975	2-6	69,067	...	
Total, ...	...	20,618	...	...	17		...	3,329	...	...	...

These figures show that great room exists for the extension of education in this district. Taking all religions, only 1-3 per cent. of the male children up to

12 years are under instruction, only 3·7 per cent. of the male population between 12 and 20 can read and write, and only 4·9 per cent. of the population above 20 years of age. *Female education is practically absent.*

There are thirteen printing presses in the district. Of these four are in cantonments—two regimental and two private. There is also one in the Central Jail, six in Meerut city, and two at Sardhana. The *Lawrence Gazette*, *Jahwatár*, *Muir Gazette*, *Najmul-Akhbar*, *Akhbar Alam*, and *Meerut Gazette* are newspapers printed in Urdu at native presses in Meerut. The *Jagat Samáchar* is printed in Hindi. At Sardhana the priests print school-books for the use of their schools.

There are no peculiar dialects spoken in the district; the language in common use among the mass of the inhabitants is the ordinary Hindi, with an intermixture of Persian and Arabic. The language of servants in cantonments, known as '*bungalow blásha*,' is a curious mixture of bad Urdu, bad Hindi, and vilely pronounced English. Amongst the better class of natives the pure Urdu of Dehli is spoken, in a manner due to the closeness of Meerut to the imperial city.

The principal post-office is in Meerut cantonments, whence letters for the offices in the interior are daily despatched by runners. There are thirteen imperial offices, *viz.*, Meerut, Bágpat, Baraut, Binauli, Dásna, Gháziabad, Garhmuktesar, Hápur, Mawána, Murádnagar, Pilkhwa, Shahdara, and Sardhana. The district dák offices number twenty-one, *viz.*, Bahádurgarh, Baloni, Begamabad, Baksar or Sakhera, Bahsúma, Ohhaprauli, Dáha, Dhaulána, Daula, Daurála, Inchauli, Farínagar, Gohra, Jáni, Khékara, Kharkoda, Kutána, Kunruddinnagar, Loni, Parichhatgarh, and Sháhjahánpur. The post-office statistics for three years during the last decade are shown in the following table:—

Year.	Receipts.						Charges.					
	Miscellaneous, savings, fines.	Passengers and parcels.	Deposits, guarantee funds, family funds.	Remittance.	Postage.	Total receipts.	Charges fixed and contingent, salaries, &c.	Mail service.	Remittances.	Other charges, re-funds, advances, printing.	Cash balance.	Total charges.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1861-62, ...	420	60,858	10,660	28,329	16,141	1,16,408	25,293	1,925	71,479	17,668	73	1,16,638
1865-66, ...	149	...	5	37,406	19,147	56,707	18,065	19,229	19,282	13	137	56,706
1870-71, ...	497	...	10,836	26,314	16,735	64,382	17,478	4,196	26,845	15,551	312	64,382

In addition to the above, the receipts in 1860-61 from staging bungalows amounted to Rs. 1,016, and the expenditure to Rs. 785; the receipts for

service postage to Rs. 36,971, and the expenditure to the same amount, making a total receipts of Rs. 1,54,394. The returns below give the numbers of letters, newspapers, parcels, and books received and despatched during 1861-62, 1865-66, and 1870-71:—

	1861-62.				1865-66.				1870-71.			
	Letters.	News-papers.	Parcels.	Books.	Letters.	News-papers.	Parcels.	Books.	Letters.	News-papers.	Parcels.	Books.
Received,...	431,834	49,184	4,329	3,960	470,343	51,762	4,116	5,736	540,435	61,418	3,899	0,524
Despatched,	412,141	61,146	3,115	1,957	462,436	52,710	3,674	5,732	652,473	38,855	3,665	10,319

The Meerut subdivision of the Telegraph Department comprises the main line from Ambála to Agra, and the branch lines from Gháziabad to Dehli, from Meerut to Mussooree, and from Rúrki to Hardwár. The head-quarters of the subdivision are at Meerut, and the whole is included in the Panjáb Division. There are telegraph offices at the railway stations at Gháziabad, Meerut city and cantonments, and Beganabad within this district.

The chankidárs or village watchmen, as reorganised under Act XVI. of 1873, numbered 2,600 men in 1873, entertained at an annual cost of Rs. 93,600, which is met from the provincial budget. The ordinary pay is at the rate of Rs. 3 per watchman per month. There is one watchman to every 401 inhabitants, and there are 1,518 inhabited villages in the district. The regular police are enrolled under Act V. of 1861, and during the same year numbered 1,469 men of all ranks, costing Rs. 1,51,679 per annum, of which Rs. 1,11,243 were chargeable to the provincial revenue. The proportion of police to area is one to 1.6 square miles, and to total population is one to every 867 inhabitants. The following statement shows the crime statistics and the results of police action for seven years after the mutiny:—

Year.	Cases cognizable by the police.					Value of pro- perty.		Cases.			Persons.			
	Murder.	Dacoity.	Robbery.	Burglary.	Theft.	Stolen.	Recovered.	Total cogniza- ble.	Under enquiry.	Prosecuted to conviction.	Brought to trial.	Convicted and committed.	Acquitted.	Proportion of convictions to persons tried.
1865, ...	9	..	9	555	1,268	Rs. 50,856	Rs. 21,096	2,421	818	495	1,565	833	741	53.20
1867, ...	11	..	9	319	1,462	69,247	30,081	2,633	1,911	512	1,515	936	518	61.10
1868, ...	13	1	19	361	1,373	74,172	28,675	2,652	2,016	552	1,720	1,075	597	62.50
1870, ...	14	..	27	319	1,027	96,487	20,676	2,363	1,706	683	1,975	1,243	727	63.20
1871, ...	12	4	21	579	1,141	83,287	18,854	3,050	2,600	1,228	2,846	2,032	813	71.42
1872, ...	13	4	20	729	1,184	75,927	28,284	3,207	3,060	1,291	2,894	2,160	327	74.64
1873, ...	12	2	31	831	765	66,867	31,091	3,420	3,382	1,941	4,562	3,914	581	85.79

The cases of heinous crime in this district undetected are both many and heavy, and it would appear that there are few districts in these Provinces where the administration in this respect bears such little fruit. The Magistrate attributes this state of affairs to the present village communal system undergoing a process of disintegration, rendering the village joint responsibility null and void, and to undue reductions in the numbers of the force. The Inspector-General, on the other hand, attributes it to the non-enforcement of the responsibility of landowners in reporting crime under the existing regulations; whatever may be the cause, the results are not creditable to the administration.

There are first-class police-stations in Meerut city and cantonments, Barant, Bágpāt, Sardhana, Ghāziabad, Hāpur, Garhmuktesar, Panichhatgarh, Jāni, Begamabad, Kharkoda, Mawāna, Daurāla, Shahdara, and Kithor. Second-class stations exist at Loni, Dhaulāna, Binauli, Meerut, Chhaprauli, Baleni, Khekara, Dūha, Dāsna, Pilkhua, Murādnagar, Pūth, Baksar, Kunruddīnnagar, Bahsūna, Sarzapur, Kunkurkhera, and Mau. Third-class stations or outposts are established at Bahrāmbās, Dālri, Phaphūnda, Barā Partābpur, Pūth khās, Inchauli, Kāsimpur, Kutāna, Jagaula, Dohāi, Newari, Kaili, Upahra, and Nizāmpur, most of which are noticed in the Gazetteer portion of this article.

The result of the inquiries instituted regarding the practice of female infanticide in this district was that only five villages inhabited by the Būrha and Tewat sects of Jāts of the Hele stock were proclaimed. In 1871-72 they numbered 819 souls, amongst whom there were 259 boys and 59 girls, and the rules were put in force from the 1st April, 1871. These villages are all situated in the Hāpur parganah, and during the year 1871-72 the rules worked well, so that it was not found necessary to institute any prosecutions for evasion. In 1873 Mr. Plowden presented an exhaustive report on the Jāts, Ahirs, and Gūjars based on special inquiries directed to be taken during the preparation of the census of 1872, from which it would appear that he considered these three tribes as needing further examination, besides pointing out certain villages where it seemed advisable to at once introduce the rules for repression. His successor was directed to review these statements and make definite proposals for the introduction of the Act, but these instructions were carried out in such a way that no orders could issue during 1874.

The statistics of the central jail are as follows:—The average number of prisoners in jail in 1850 was 378; in 1860 was 1,799, and in 1870 was 1,329; the *ratio* per cent. of this average number to the population, as shown in the census of 1865 (1,199,593), was in 1850, .031; in 1860, .150; in 1870, .154. The number of prisoners admitted in 1860 was 3,902, and in 1870 was 2,525, of whom 98 were females. The number of prisoners discharged in 1870 was 1,289. In 1870 there were

873 admissions into hospital, giving a *ratio* of admissions to average strength of 65·66; of these 136 died, or 10·23 of the total strength. The cost per prisoner per annum in 1870 was for rations, Rs. 19-12-0; clothing, Rs. 2-14-9; fixed establishment, Rs. 17-5-3; contingent guards, Re. 1-10-2; police guards, Rs. 3-9-0; and additions and repairs, Rs. 2-10-11, or a total of Rs. 47-14-1. The total manufactures during the same year amounted to Rs. 1,320-1-0, and the average earning of each prisoner to Rs. 9-15-8. In 1870 the Muhammadan prisoners numbered 507, and the Hindú 803. There were 34 prisoners under 16 years of age, 1,493 between 16 and 40, 252 between 40 and 60, and 36 above 60. The occupations of the majority of the male prisoners were, agriculturists 766, labourers 234, shop-keepers 151, and domestic servants 158.

The statistics of the district jail for 1870 are as follows:--The average number of prisoners in jail was 524. The number of prisoners admitted was 1,080. The number of prisoners discharged was 517. There were 608 admissions into hospital, giving a ratio of admissions to average strength of 116·07; of these 58 died, or 11·07 of the total strength. The cost per prisoner per annum for rations was Rs. 19-12-0; clothing, Rs. 4-12-6; fixed establishment, Rs. 6-12-6; contingent guards, Re. 1-8-11; police guards, Rs. 2-10-1; or a total of Rs. 35-8-0. The total manufactures during the same are amounted to Rs. 767-11-0, and the average earning of each prisoner to Re. 1-7-5. The Muhammadan prisoners numbered 219, and the Hindú 614. There were 7 prisoners under 16 years of age, 807 between 16 and 40, 16 between 40 and 60, and 3 above 60. The occupations of the majority of the male prisoners were agriculturists 433, labourers 213, and domestic servants 83.

As already noticed, the present district of Meerut formed a portion of the southern division of Saháranpur. In 1818 the present district was formed, and in 1842 many changes took place as well in the internal distribution of the several parganahs as in exchanges with the neighbouring districts; it is therefore impossible to enter into details here regarding the early fiscal history of the district. It has been more correctly noticed under the Saháranpur and Muzaffarnagar districts, I shall accordingly confine myself to the settlement under Regulation IX. of 1833 and the present settlement. In doing so the district must be divided into two portions. The first consists of parganahs Ohhaprauli, Bágpát, Loni, and all the parganahs east of the Hindan except Sardhana, which were settled by Mr. Glyn and Mr. (subsequently Sir H. M.) Elliot from 1835 to 1837; and the second of the parganahs of Sardhana, Baraut, Kutána, and Barnáwa, which with Burhána, now in the Muzaffarnagar district, formed the estate of Begam Sumru. The existing settlement of the district was effected by Mr. W. A. Forbes, C.B., and Mr. J. S. Porter between the years 1865 and 1870. The total area of each parganah divided into assessable

and barren and free of revenue has already been given (page 239) for both settlements, so that here we have merely to note the fiscal results at each settlement and the revenue statistics of the census of 1872 :—

Parganah.	Assessable area in acres.	Land-revenue.	Revenue-rate on cultivated area.		Revenue with cesses in 1872.	Parganah.	Assessable area in acres.	Land-revenue.	Revenue-rate per acre on cultivated area.		Revenue with cesses in 1872.
			Rs.	Rs. a. p.					Rs.	Rs. a. p.	
Meerut ...	1835,	105,404	3,84,537	2 3 8	...	Bágpát ...	1835,	95,386	1,49,220	1 13 8	...
	1866,	192,348	4,03,905	2 7 3	...		1866,	111,219	2,10,035	2 2 2	...
	1872,	191,090	4,13,536	2 7 3	4,54,951		1872,	110,975	2,10,035	2 1 1	2,51,199
	1835,	86,794	1,20,970	1 13 6	...		1835,	40,675	1,07,478	3 3 6	...
Hápur ...	1866,	90,871	1,33,000	1 11 0	...	Baraut ...	1866,	43,021	1,16,400	2 14 5	...
	1872,	85,103	1,34,320	1 11 7	1,49,775		1872,	43,593	1,15,400	2 14 2	1,26,948
	1835,	40,858	52,552	1 12 2	...		1835,	38,094	87,873	2 2 2	...
	1866,	49,870	60,860	1 10 11	...		1866,	41,830	98,825	2 12 6	...
Sarāwa ..	1872,	42,444	60,905	1 11 0	67,201	Kutana, ...	1872,	40,152	95,425	2 12 10	1,09,376
	1835,	49,322	48,096	1 10 0	...		1835,	31,035	82,801	3 5 2	...
	1866,	50,790	58,880	1 6 3	...		1866,	33,691	89,725	3 1 7	...
	1872,	53,911	59,497	1 5 9	65,239		1872,	31,834	59,301	3 1 0	65,739
Garhmuktesar, ...	1835,	80,477	40,130	1 14 10	...	Chhaprauli,	1835,	70,889	1,57,714	3 1 1	...
	1866,	32,932	41,235	1 11 4	...		1866,	75,048	1,71,180	2 8 3	...
	1872,	35,005	40,052	1 10 7	41,135		1872,	76,045	1,71,403	2 8 7	1,88,560
	1835,	71,450	97,163	2 0 5	...		1835,	53,377	1,20,795	3 2 6	...
Dāsna ..	1866,	77,173	23,050	1 15 9	...	Barnāwa	1866,	57,873	1,23,960	2 9 0	...
	1872,	77,128	1,12,335	1 14 0	1,33,334		1872,	57,803	1,20,035	2 9 0	1,41,951
	1835,	108,743	43,580	1 11 6	...		1835,	88,394	92,237	1 7 11	...
	1866,	110,465	1,75,035	1 14 4	...		1866,	105,898	1,19,380	1 7 6	...
Jaldhābad	1872,	110,355	1,74,718	1 13 4	1,92,631	Kithor ...	1872,	106,554	1,18,515	1 6 6	1,30,428
	1835,	74,076	1,76,872	1 7 6	...		1835,	94,492	1,14,482	1 14 2	...
	1866,	83,702	95,261	1 8 7	...		1866,	121,602	1,48,790	1 14 5	...
	1872,	83,705	95,373	1 6 9	1,04,931		1872,	132,004	1,47,680	1 13 4	1,62,247

“The collections of the Meerut district,” writes Sir H. M. Elliot in 1835,

Sir H. M. Elliot. “have always been realized with facility, and there

is every reason to suppose that the land-revenue has not pressed heavily on the resources of the country. Considerable variety prevails in the fertility of the several parganahs; those which are between the Káli Nadi and the Ganges being poor and sandy, while those near the Jumna are chiefly of a rich black soil, producing sugarcane, tobacco, cotton, and other superior products, and assessed at an average considerably higher. The natural advantages of the western side have been considerably improved by the opening of the Duáb canal, which, though it injures the soil after the second or third year by a sandy deposit, has had the effect of causing all the waste in its neighbourhood to be reclaimed and yield abundant harvests.”

Mr. Elliot considered Chhaprauli the first parganah in the district. He writes :

“Sugarcane, cotton, wheat and tobacco are cultivated in great abundance, and all the villages are admirably situated for the disposal of their produce. They have large towns and marts on every side—Kairāna, Kándhla, Shámli, Kutāna and Baraut, with the Jumna on the west and the canal on the east. To all these is added the advantage of being well populated and well cultivated by Játis.” The soil of parganah Loni is very inferior to that of Bágpát, having a great admixture of sand, and salt and consequently benefiting less by the means of

irrigation at its disposal. The cultivators also, being chiefly Gájars and Tagas, are not such active agriculturists as in other parganahs. Of Dásna he writes: "Sugarcane is cultivated only in a few villages, but good *rabi* crops are produced. The irrigated land bears a proportion of more than one-half to the unirrigated. The waste land is almost equal to one-half of the land under cultivation. At the present time the cultivated area is 61,932 acres, the uncultivated but 25,916. In the parganah of Páth, particularly in the villages which are near to the Ganges, there is a great admixture of sand with the soil." Mr. Plowden writes (1840) of the deceased Begam Sumrn's estates:—"The nature and quality of the soil is similar to that which characterises the western portion of the district, being in the two parganahs nearest the Jumna (Kntána and Baraut) a rich black loam and assuming a redder tinge, and a less degree of consistency in the other three and more inland (Sardhana, Barnáwa, Burhána)." *Dákra* and *soota* are the denominations of these two kinds of soil; the proportion of *bhátr* or inferior land to the above in the parganahs is very small, being about one-eighth of the whole.

As division of crops generally prevailed at last settlement, Sir H. M. Elliot found it difficult to discover a money-rate which should form a fair guide in assessment. He collected the crop rates of all the villages in Nain Singh's *mukarari* from the papers of the estate, and from the *kánúngos* the prevailing rate in every village, and with these data and local inquiry to correct them he drew up an average rate¹ per pukka bigha for irrigated and dry land, without specification of soil, for which he relied upon the landholders' own statements. The parganah rate thus formed was again tested by local inquiry and a comparison of the records of rent suits and an examination of the grain-dealers' books. The parganah rate was then distributed over the dry and irrigated cultivation of each village, and was lowered or raised according to the individual capacities of the villages. "Regard was had to circumstance which should have due weight in fixing assessment, such as the state of the village, whether deserted or in good repair; the prevalence of *pahi* cultivation; the amount of culturable waste; facility of land or water carriage; the past fiscal history; the nature of the soil; the caste of the cultivators; the unanimity or discord of the community; the depth of water; the density of the population; the previous alienation of rights, and the vicinity of marts."

In parganah Meerut irrigation² has greatly increased since Sir H. Elliot's assessment and cultivation has advanced over ten per cent., so that it easily bears the new revenue. It is one of the largest parganahs, and contains within it the city of Meerut and adjoining

¹The pukka bigha is 0·625, or five-eighths of an acre: I, Set. Rep., 181.

²Further details will be found under each parganah in the second part of this article, and for the 1835 assessment in I, Set. Rep., 163.

villages. In parganah Hāpur, though cultivation has increased nearly 20 per cent. and irrigation 107 per cent. between the two settlements, yet in seasons of drought the parganah suffers very much, and during the currency of the last settlement 20 per cent. of the area changed hands and was chiefly bought up by money-lenders. Sarāwa is a poor parganah on the whole, and though the new revenue is a low one, it would seem not to be able to bear more. In Pūth the inequalities of the last settlement have been removed, and with increased irrigation (now only 20 per cent. on the cultivated area) this parganah will probably equal the others by the close of the settlement. In Ghāziabad the old assessments seem not to have been adjusted on any firm basis; the fourth settlement reduced the revenue considerably, only to be again increased at the fifth. Here, too, many confiscations took place on account of mutiny, so that it is difficult to attain to any fixed data for comparison with the last two settlements. In Jalālabad the present revenue-rate is a low one, but there is still much waste land, and the landholders need encouragement to reclaim. Loni shows a marked improvement: irrigation has trebled and cultivation has increased over 18 per cent., but the poor quality of the *khādir* land and the bad cultivation of the Gūjars have tended to keep down the revenue-rate. The same causes for the comparative lowness of the rate exist in Bāgpat, which in other respects has much improved of late years. Chhaprauli is situated in the heart of the best Jāt tract, and naturally gives a higher revenue-rate than the Gūjar tracts. Both soils and irrigation are excellent, and there is no considerable amount of bad land, while manure is abundant and much used by the cultivators. Garhmuktesar shows an increase of nearly 50 per cent. in cultivation, while irrigation has nearly trebled. The poorness of the newland explains the largeness of the increase in the revenue with a fall in the rates. In Kithor, too, the cultivation has increased by over 30 per cent., while the irrigation has more than doubled. In Hastināpur there has been similar increase in both cultivation and irrigation, still the revenue-rate is higher than any other Ganges parganah.

The remaining parganahs formed portions of the estate of the notorious Bogam Sumru, and Mr. Plowden in his report gives a graphic description of their state during the Begam's management. Up to the death of the Begam a very large revenue was extracted from the estate, and at the same time arrears and transfers were almost unknown. The cultivators were assisted with or even compelled to accept *tak-kāvi* advances whenever they needed them, and were, also, compelled to pay the highest revenue which their character as cultivators or the goodness or otherwise of the season permitted the tax-gatherers to collect. Unfortunately for the people, three years before the lapse of the estate, the Begam's heir abandoned the policy that had hitherto been so successful, and fixed a revenue for three

The Sumru estates.

years on an average somewhat in excess of the previous demand. The average demand during the 20 years of the Begam's management had been Rs. 5,49,157, with a balance of Rs. 19,439. This was increased to Rs. 6,79,730 in the first year of the new settlement, and rose to Rs. 6,91,388, exclusive of Rs. 23,047, the revenue of villages held under direct management, in the third year. The consequence may be easily imagined. The cultivators abandoned their holdings, 128 villages fell under direct management, and the ruin was rapidly increasing, when the death of the Begam and the lapse of her possessions to the British Government restored confidence to the people. The sudden increase in the revenue was not the only cause for the deteriorated state of these parganahs : to this must be added "gross mismanagement in the fiscal and judicial administration by the systematic plunder and extortion indulged in by every underling in office, by the heavy miscellaneous taxes which annoyed and harassed the people and paralysed all commercial dealings, and by the hopelessness of redress." Mr. Plowden assessed the parganahs, including Sardhana, Baraut, Barnáwa and Kutána, at Rs. 5,44,000. The new assessment, though high when compared with the eastern parganahs, was very moderate when compared with the revenue collected during the Begam's administration, and it must also be remembered that these parganahs are the very best in the Meerut district.

Mr. Forbes, in a memorandum attached to the settlement report, explains the mode of assessment at the recent settlement. His first care was to form soil and produce rates. This he accomplished by taking a number of villages in each parganah and estimating the produce of each kind of crop in each class of soil in well, tank and irrigated canal land. From the outturn where rents were paid in kind was deducted the cultivator's share at the average proportion found to prevail in the parganah. The average price of the remainder was obtained from the grain-dealers' books for ten years tested by the prices-current of the district, and thus a rent-rate for each crop on each class of soil was obtained. Where rents were paid in cash a second series of rent-rates was found by consulting the village rent-roll and rent-suits and by local inquiry. The average of the two series of rates were then applied to each class of soil in each village, and an average revenue-rate for each tract was thus obtained. These served as a test of the correctness of the conclusions drawn from the personal village-to-village inquisition subsequently undertaken, when allowances were made for natural disabilities and advantages, such as nearness or remoteness from markets, irrigation, roads, the character of the cultivators, and all other similar matters affecting the revenue-paying power of the village. On the whole, the present settlement has succeeded in equalising the assessments with an increase in the Government demand and a complete record of rights, and both the people and the Government are to be congratulated on its successful termination.

The landowning castes have been already noted, it is sufficient here to summarise the results. The following list shows the Caste of landowners. number of villages held by each caste at the recent settlement :--

Játs,	488	Bohras,	4
Hindú Tagas,	289	Khattis,	5
Musalmán ditto,	46	Hindú Meos,	1
Gújars,	209	Musalmán Meos,	2
Hindú Rajpúts,	194	Kahárs,	2
Musalmán ditto,	48	Mális,	5
Baaliyas,	136	Gosháins,	9
Brahmans,	76	Gaddis,	6
Alírs,	41	Kambos,	13
Rawas,	17	Musalmánas,	224
Chauháns,	16	Europeans,	33
Káyaths,	16	Total	1,881

As in nearly all the other districts of the Duáb, the tenures of land may here be classed under zamíndári, perfect pattidári, or, thirdly, imperfect pattidári, including bháyachára. Sir H. M. Elliot in his report on the settlement of this district in August, 1836, says:—"I have contented myself with considering that whenever the land of a village has been actually divided, or the extent of a sharer's interests is limited by the quantity of land in his possession, or where it is held in severalty by men who have no other bond of connection with each other than the necessity of fulfilling a common obligation, the tenure is *pattidári*; that the same minutely subdivided is *bháyachára*; and where there is no division of land, but only a right to a certain portion of profit expressed in fractions of a bigha, that the tenure is *zamíndári*. Some tribes have a greater inclination for a division of their land than others, and this effect is easily to be ascribed to their peculiar propensities. The Játs, for instance, on account of their fondness for agricultural pursuits, generally prefer the *bháyachára*; the Tagas either *bháyachára* or divided *zamíndári*; the Rajpúts, Patháns, and Sayyids, being too insolvent and proud to cultivate much themselves, generally prefer the *biswa* division; and the Gújars, being much addicted to thieving and more indifferent than any other class, scarcely ever have a *pattidári* division, and very seldom subdivide a *zamíndári*: they are usually allowed to resume their own share after a long absence or sojourn in a foreign land, which right would be contested by the other classes, amongst whom the relinquishment of a share for any length of time is reckoned a virtual defeasance." In this district, notwithstanding its vicinity to the scene of perpetual revolutions and anarchy, almost all the landed proprietors trace their descent from periods long antecedent to these very revolutions. The *chaurásis* (or 84 villages, equivalent to the Saxon hundreds) may be said to exist in almost their pristine integrity among the Rajpút and Ját communities, and the subdivisions into 42 (*bedsi*) and 12 (*bárah*) villages are still more frequent. These *chaurásis* are found all over Rajputána. Sir H. M. Elliot mentions several *chaurásis* now existing in this district. There is a *chaurási* of Chauhan Rajpúts in Dásna

and Jalálabad. There is half a *chaurási* of the same tribe in Púth. The parganah of Loni was formerly a *chaurási*. In Bágpát the Gaur Tagas had a *chaurási* of which but few villages now remain in their possession. In the same parganah the Deswál Ahírs had half a *chaurási*. The Maheshwára Tagas have a *chaurási* in Kithor. The Basián and Dateon Tagas have each a *chaurási* in Púth and Sayána (in Bulandshahr). The parganah of Meerut is said to have consisted of 360 villages. The fact that the Tagas have so many *chaurásis*, a Rajpút institution, seems to support their own story that they came from Hariána, not from Gaur. Elliot does not credit this tradition. The most ancient tenures in the district are those of the Rajpúts, Tagas, Gújars, and Játs, with the exception of the Panjábi Játs, *i. e.*, those of the Dhe clan who have been located here only within the last century, and the Gújars near the Ganges who obtained possession during the time of Raja Jít Singh and his successors. The Sayyids say that they acquired their zamíndáris during the earliest periods of Musalmán conquest, and the Patháns about Púth and Bahádurgarh in the time of Jahángír. The only taluka in the district is that of Paríohhatgarh, comprising six villages in parganah Kithor.

The most common method in *zamíndári* villages is to collect in common and divide the profits either before or after the payment of the revenue. In the first case the sharer is responsible for a particular portion of the revenue, and the fractional rights would be sold in case of default: in the other, after the whole revenue is paid, the profits or losses are distributed according to the several shares, and the whole village is responsible for revenue balances. In *zamíndári* villages inferior sharers frequently cultivate at fixed rates, which are generally comparatively low, and claim nothing beyond this limitation, but, in addition, they usually enjoy immunity from the payment of village expenses. In *bháyachára* villages, where each sharer's holding is divided off, a regular money rent is paid generally by distributing at an even rate per bigha on each share the Government revenue as well as all other expenses which may arise on account of the payment of the land-revenue and the village charges. In *pattidári* villages various modes of payment prevail, varying even in the pattis of the same village, but generally a *báchh* or rate system of some kind or other predominates.¹

The method of collecting the sum varies considerably, though one system is usually found to prevail with very slight distinctions in one parganah or other division of country. In some communities the malguzárs are alone subject to the impost, in others the whole body of sharers or only tenants-at-will; sometimes the amount is distributed by *báchh* or rate, sometimes from the produce of singháras (*Trapa bispinosa*), sometimes at a fixed rate per man or per bigha, but generally it is realized according

¹ Elliot Set. Rep., I., 185.

to the method which prevails in collecting the Government revenue. In some villages a considerable amount is realized on account of *malba* (as these charges are called), and it will be found generally to vary with the character and caste of the proprietor. In these village expenses are entered such items as mourning *pagris* (*dastār matami*), alms to fakirs, travellers, and jugglers, which generally come into the account of the village Baniya, through whom these expenses are paid under the head of *bardāshī* or *ūchapāt*, *lambardār's* expenses in attending Government offices, fines, money expended in repairs of village buildings, &c.

From the returns of the late settlement it appears that of the 2,255 *māhāls* or estates in the district, 970 are *zamāndāri*, 841 are Existing tenures. *bhāyachāra*, and 244 are *pattidāri*. In the Bāgpat and Sardhana tahsils nearly all villages are *bhāyachāra*. In Ghāziabad tahsil, of 429 estates, 206 are *bhāyachāra*, 37 are *pattidāri*, and 117 *zamāndāri*.

I here append a statement showing the number of estates upon the rent-roll of the district, with the total land-revenue paid and the number of registered proprietors paying rent direct to Government for the following years:—

Year.			Number of estates.	Number of registered proprietors or coparceners.	Total land-revenue paid.	Average land-revenue paid by each estate.	Average land-revenue paid by each proprietor or coparcener.
						Rs. a. p.	Rs. a. p.
1850-51,	...	...	1,614	63,186	16 23,796	1,006 1 1	25 11 2
1860-61,	...	...	1,969	73,925	17,83,304	905 11 0	22 4 8
1869-70,	...	...	2,046	94,208	18,04,976	882 3 1	19 2 6

During the currency of the thirty years' settlement 43 per cent. of the area changed hands, of which only five per cent. was by Transfers. forced sale. This may perhaps be due to the character of the settlement, which was "fixed more with regard to the means of the persons from whom the engagements were taken than to the capabilities of individual villages and the circumstances of the cultivators." In Chhaprauli, where village capabilities were not ignored, the transfers amounted to only sixteen per cent. of the total area, and of these only one-fourth were due to forced sale. In Kutāna eight per cent. changed hands, chiefly the estates of Jāts and Tagas, which were bought in by the same tribes. In Garhmuktesar the transfers were 29 per cent., but deducting private sales, due in a great part to the enhanced value of the land from increase in cultivation and irrigation, the residue denoting forced sales is little more than three per cent. Ghāziabad shows the largest number of transfers, but as most of these are due to confiscation after the mutiny on

account of rebellion they lead to no just conclusion. The cause of their rebellion was not due to heavy assessments. In a few cases the Rajpúts fought out old feuds and rose against their neighbours rather than against Government. In one case it is to be feared that the proprietors lost their estate on account of the rebellion of the non-proprietary residents. Hápúr shows transfers amounting to 20 per cent., and here the old proprietors have been replaced by money-lenders. The Játs too have bought up much of the land and parted with little, while the Tagas have lost more than they gained by 2,000 acres. Of the 28 per cent. transferred in Loni the greater portion belonged to the prevailing castes of Grájars and Tagas, while Brahmans, Rajpúts, Káyaths, Afgháns, and Sayyids form the new proprietary body. In Jalálabad the Játs and Tagas have exchanged amongst themselves 23 per cent. of the area. In Sardhana 14 per cent. of the area possessed by Játs, Tagas and Rajpúts has been transferred, and one-quarter of it has fallen into the hands of Baniyas. This is exclusive of the confiscated villages of Sardhana and Panchli. In Barnáwa only nine per cent. has changed hands, and this was principally due to the pressure of the famine years. In Bágpát the changes have been very few, but in Meerut again they rise to 20 per cent. of the area. Few, however, of the Meerut transfers, with perhaps the exception of the villages of Jatanli and Mámipur, can be attributed to severity of assessment. Of the entire transfers those in 69 estates are due to confiscation, the majority of which belonged to village communities, (*bháyachára*); of these 49 have been sold by auction and 16 have been given away in reward, while four are held under direct management.

Regarding the changes occurring before the thirty years settlement, Sir

Changes before 1835.

H. M. Elliot, writing in 1836, says "the Meerut district has been very little affected by auction sales, and comparatively few interests have been transferred since the conquest." From 1213 to 1233 *fasli* (1805-06 to 1825-26 A.D.) only 38 villages had been sold both for arrears of revenue and under decrees of Court. This satisfactory state of things continued up to the time of the mutiny in 1857, and still exists. Mr. Forbes in his revenue administration report of 1273 *fasli*, corresponding to 1865-66 A.D., remarks :—"A man who is sold up under a decree of court, or who is forced to mortgage his lands, is in ninety-nine cases out of a hundred in distressed circumstances, whilst on the other hand the free sale of land by private arrangement is good proof that land is in demand and can find ready purchasers. In that year there were only 67 forced sales. This for a district producing 18½ lakhs of land-revenue is a small number." Again in his report for 1276 *fasli* (1868-69 A.D.) he writes :—"I am not disposed to regret the increase of private sales; they are invariably of small holdings, and I think much benefit will be found to result from such transfers. Land I know to be rapidly increasing in value, and the transfers both by sale and

mortgage are taking place between the agriculturists themselves, and not with the trading classes."

The official returns for 1860-61 to 1873-74 are shown below :—

Year.	UNDER ORDERS OF COURT.				BY PRIVATE TRANSFER.				
	Sale.		Number of other cases.	Total number of cases.	Sale.		Successive number of cases.	Mortgage number of cases.	Total number of cases.
	Number of cases.	Aggregate land-revenue of property transferred.			Number of cases.	Aggregate land-revenue of property transferred.			
1860-61, ...	55	...	175	230	483	..	1,748	415	2,646
1861-62, ...	38	71	120	158	271	2,034	2,366	202	2,839
1862-63, ...	46	543	158	204	189	4,699	2,633	187	2,959
1863-64, ...	90	184	160	250	320	3,956	2,579	264	3,163
1864-65, ...	73	1,310	199	272	276	1,336	2,148	284	2,708
1865-66, ...	67	1,580	167	234	335	4,097	1,648	133	2,116
1866-67, ...	39	49	233	272	279	2,732	1,113	166	1,558
1867-68, ...	59	1,256	206	265	354	2,444	411	154	919
1868-69, ...	44	187	299	343	462	2,827	491	298	1,251
1869-70, ...	60	431	138	198	490	8,561	510	300	1,300
1870-71, ...	73	353	95	168	484	2,436	516	429	1,429
1871-72, ...	99	4,090	61	160	393	25,529	810	653	1,856
1872-73, ...	139	4,854	103	242	609	18,607	1,040	877	2,526
1873-74, ...	172	2,445	93	267	508	61,068	1,512	831	2,846

The following is a statement of the partitions of rights in land completed in this district during the six years 1865-66 to 1871-72 :—

Fasli year.				Completed and confirmed by the Collector.	Number of pattis.	
					Before division.	After division.
1273, ...	...	...	...	73	78	262
1274, ...	...	...	...	64	71	197
1275, ...	...	...	...	340	358	821
1276, ...	...	...	...	547	666	1,199
1277, ...	...	...	...	374	528	1,098
1278, ...	...	...	...	534	1,862	3,043

The partition Act, XIX. of 1873, is productive of the greatest advantage to the people, and has given an extraordinary impetus to high and careful farming. In place of vague divisions, in which the sharers knew not what they owned, the Act gives them their land in smaller holdings clearly defined.

The Meerut district is singularly destitute of old influential families. Those worthy of mention are the Gújars of Paríchatgarh, the Old influential families. Begam Sumru, the Kambos of Meerut, and the Kánungo family of the same places. The Játs of Kuchchesar have been noticed under the Bulandshahr district.

The Gújar family of Paríchatgarh, like their clansmen of Dádri and Landhaura and the Játs of Kuchchesar, owed their existence to the troubled state of the times during the latter half of the past century. The founder of the family, Rao Jít Singh, found the occupation of leader of banditti more profitable than his hereditary calling of grazier and cattle-lifter, and more to his taste than cultivating the soil for crops which the Sikh, Marhatta, or Imperialist raider had quite as good a chance of reaping as the person who sowed them. He commanded the gháts into Rohilkhand and reduced the levying of black mail to a science, establishing his ámils as he went. Although his depredations were known to the court of Dehli, no notice was taken of his conduct until he happened to slay, in an encounter, the *chela* (or disciple) of one Parta Singh, a Dákhini subahdár and favourite of the mother of Ahmad Sháh, the reigning emperor. Parta Singh marched with what he considered a sufficient force to chastise this insolent ploughman and cowherd, but was himself defeated and slain. Kumar Ali, the kotwál of Dehli, next tried to capture the Gújar leader, but suffered the same fate, and so others, until the emperor invited the heads of the banditti to Dehli and invested them with plenary authority over the country that they had already been able to occupy, on condition that they should prevent others from thieving. Dargáhi Singh held Dádri and its neighbourhood; the Ját leader of Kuchchesar, Mangni Rám, held Sayána, Púth and Farida, and Jít Singh obtained possession of the eastern parganahs of this district. Jít Singh died of paralysis without leaving any male issue, and was succeeded by his nephew, Nain Singh, to whom Perron, the Marhatta governor of Aligarh, gave over 300 villages in *jáglr*. Nain Singh first established himself at Paríchatgarh, and subsequently at Bahsúma or Baisambha. On the occupation of Meerut by the British, Nain Singh was permitted to hold his accumulation on the terms granted to him by the Marhattas, and subsequently this concession was made to him for his life.¹ During his lifetime he gave much trouble to the authorities by harbouring offenders and engaging in an extensive smuggling trade in salt. Nain Singh died about the middle of the year 1818, and his family were allowed to retain the *rabi* produce of that year. He left one son, Nátha Singh, who made no claim to his father's *mukarári*, but sued for the proprietary right in 183 villages under a zamindári farmán by right of inheritance, and for similar rights in 35½ villages by virtue of a lease at a fixed revenue in his own name. The validity of these sanads was acknowledged by

¹Board's Records, October 1, 1804; September 30, 1805.

Government,¹ as well as of certain decrees founded upon them. Unfortunately, at the time the decrees were given, the distinction between the different interests which attach to land, its produce and rent, was imperfectly understood, and under the general term zamindári proprietors of very different kinds were comprehended. The Government ruled that the sanads produced by Nátha Singh could not be held "to vest the grantees with more than a hereditary right of collection and management, with the perquisites ordinarily attaching to such málguzárs, to which was subsequently added the advantages of a fixed contract. There seems not to be the slightest ground for supposing that it was in any degree intended to interfere with the rights which might be enjoyed by cultivators and málguzárs whom the grantee is enjoined to favour and protect. The sanads were granted in the disturbed reign of Ahmad Sháh, and the tenure of the Raja would seem to have originated a short time before the deposition and death of that monarch, and it would have been peculiarly improper to allow any latitude of interpretation, and the character of Nátha Singh appeared, unfortunately, to be such as to afford a strong ground of objection to his being admitted to engagements for the Government revenue. The objection prevailed, of course, with peculiar force in regard to maháls subject to a full assessment." It was, therefore, resolved that with the exception of the 35½ villages which Nátha Singh had been allowed to hold under a lease at a fixed revenue, he should be excluded from the management of the villages held by his father in *mukarari*, but should have an allowance of five per cent. on their revenue as a *nankár* allowance.

Nátha Singh died on the 15th August, 1833, and the villages held by him escheated to Government. Through some misapprehension of the terms of the grant, a payment amounting to Rs. 9,000 a year continued to be made by Government to Nátha Singh's widows on account of these villages and the five per cent. allowance, when Sir H. M. Elliot took up the settlement of the district in 1836. He, with much show of reason, pointed out the absence of any authority or cause for this payment, and showed that the documents relied upon by Nátha Singh in support of his claims,² though accepted by the civil courts, were "impudent forgeries." The *mukarari*, at the conquest, comprised 274 villages, held at a fixed revenue of Rs. 50,000, which on their lapse were assessed at Rs. 1,87,068 for 1226 to 1230 *fasli* (1818-1823). In 1836 there were 136 of these villages with acknowledged proprietors, of which 20 were held by relatives of Nain Singh. In the remainder the claim to the proprietary right was disputed. Nátha Singh left one daughter, Lád Kunwar, who married Khushál Singh of the Landhaura family, and thus the Meerut and Saháranpur families became amalgamated. The fate of the Saháranpur estates is told under the notice of that district. The estates were managed by Ráni Dhan Kunwar, the mother of Khushál Singh, who predeceased her in 1829, and after her death Ráni

¹August 28, 1833.

²L. Set. Rep., 208.

Lád Kunwar continued in possession. She died in July, 1849, leaving Harbans Singh as her successor, who died in January, 1850, and was succeeded by his son Raghubír Singh. He was a minor on his accession to the estate, which came under the Court of Wards. The property was released in December, 1867, and in April, 1868, Raghubír Singh died, leaving a son, Jagat Prakásh, who has also deceased. The estate is now enjoyed by Kamala Kunwar, mother of Raghubír Singh, and by Dharm Kunwar, widow of Raghubír Singh.¹ In this district they possess twenty-five villages and portions of eight others, at a revenue of Rs. 29,348 a year, and yielding a net annual profit of Rs. 24,708. The total value of the Landhaura estates is estimated at about fourteen lakhs of rupees.

There are still Hindú Kambos in the district, and popular tradition gives the same origin to the Musalmán Kambos. The Kambos themselves say that they were, in early times, a distinguished family in Ghazni, deriving their name from '*kám*' and '*go*', the root of the Persian word "*quftan*" 'to say;' and they assert from this fanciful derivation that they were, in those days, "little talkers, but great in action." When Mahmúl Ghaznavi set out on his expedition to Hindustán, they accompanied him and succeeded in capturing the fort of Raja Mai of Meerut, where they settled. They assert that one Hasan Mahmúdi, a Kambo, was vazír of Mahmúd, and that he built the Jámah Masjid in the city. The Masjid is still in existence, and they say that around it are buried the Kambo warriors who fell in the attack on Meerut. Soon afterwards all the Kambos except Khwaja-ud-dín and Khwaja Meta left Meerut, and from these two who remained the Kambos of the present day derive their origin. The more probable account is that the Kambos were amongst the earliest Hindú converts to Islám, and were rewarded for their change of religion by the grant of lands in Meerut. The ancestors of the present family built the Sangi Mahál now known as the permit house, and the Rangí Mahál, both of which are still in existence. The most noted member of the family in recent times was Nawáb Khairandesh Khán, who flourished during the reign of the Emperor Sháhjahán and built the Khairnagar gate and fort in the city. He also built in 1691 A.D. a fine mosque called '*Khair-ul-masjid wald mudbid*,' and founded Khairandeshpur in the Etáwa district, and muhallas in Etáwa and Delhi. He is said to have been governor of Káshir (Rohilkhand), Behar, Etáwa, Bengal, Kálábágh, and Hámúri at different times in his life. The following list shows his successors:—Khairandesh Khán; Khairiyatandesh Khán, governor of Káshmir; Afyatandesh Khán, deputy governor of Etáwa; Farhatandesh Khán; and Mubárák Ali Khán, who is the present representative of the family and an Honorary Magistrate for the city of Meerut.

¹This is the Raghubír Singh to personate whom a claimant arose in Saháranpur in 1874.

The Kánúngo family, usually called Kánúngoíyán, is of the Agarwála sub-division of Baniyas. The founder of the family was Kánúngo. one Jográj, who lived in the reign of Aurangzeb. The members of this family still continue to hold responsible positions under the Government. They possess many villages. Besides these four families there is a highly respectable Bishnoi family in Phalanda. From the papers of this family it appears that a Rahtor Rajpút, named Mohat, a Bishnois. resident of the village of Pepasár in Nagor in Rajpútána, was childless, and his wife was old. This Rajpút was a pious man and a worshipper of Vishnu. He longed for offspring, and at length, by the grace of the deity, his aged wife became pregnant. A son was born on the eighth day of the dark half of the month of Bhádon in the year 1508 *samvat* (1451 A.D.) The child was named Vishnavi Parameshwára, and when he grew up he declared himself an incarnation of the deity under the name of Jhánmaji, and disciples from all castes—Brahmans Rajpúts, Chauháns, Baniyas and Ját—collected around him. A great fame increased his followers, for Baniyas, the wealthiest of his disciples, were directed by him to distribute food to the starving, on the condition that they joined his sect. The Vishnois recognize all Hindú gods, but Vishnu is their supreme deity. The Vedas and Shástras are recognized by all, the Kurán by none. The Vishnois worship either in temples consecrated to Vishnu, or where there are no such temples, they perform the *agankhotri* (or hom sacrifice) in their houses. The *agankhotri* is simply an offering of *ghi*. This offering is celebrated with considerable ceremony on the *amávás* (fifteenth) of every month. On this day the Vishnois fast. Their great holidays are the *amávás* of Bhádon, Asauj, Phálgun, and Chait. Bishnoism or Vishnoism does not cause a confusion of caste: a Vishnoi Rajpút will marry into the family of a Vishnoi Rajpút, and a Vishnoi Baniya into the family of a Vishnoi Baniya. All Vishnois however eat and drink together. On the birth of a child, on the sixth day, Hindú rites are observed with the addition of the *agankhotri*. On the death of a Vishnoi the body is usually buried. Where the Ganges is near at hand the body should be committed to it. Vishnois cannot eat and drink with any one of a different religion, and they must always have their grain parched by persons of the same sect. A Vishnoi marriage is celebrated exactly in accordance with Hindú rites, a Brahman superintending the circumambulation of bride and bridegroom. If a Brahman is not at hand, the marriage may be solemnised by a Hindú *fakír* or *jogi*. The Vishnois preserve their *gots* and *áls* or subdivisions of castes in the same manner as orthodox Hindús. It is only in Meerut, Moradabad, and Bijnaur that the Vishnois have in some cases adopted a Musalmáni name, and for this reason, that they were much oppressed by Muhammadans, and at one time nearly exterminated on account of the murder of a Kázi by one of their members. At length, with a view to conciliate the Muhammadans, some adopted Musalmáni

names, but since the advent of the British power the custom has died out. These people put great faith in the appointment of auspicious moments (*sáat, máhurat*) by Brahmans, and make pilgrimages not only to Nagor but to other places sacred to Hindús. Tombs (*mabíra*) are never erected, except in the districts of Meerut, Moradabad, and Bijnaur: in this respect, too, Bishnois imitate Muhammadans in distributing alms at the tomb of a deceased person on the anniversary of his death. This practice also is now passing away, and the salutation "Rám! Rám!" has again taken the place of "Salám" The only new family in the district is that

Iláhi Baksh.

of Shaikh Iláhi Baksh, the Government commissariat contractor, who has amassed considerable wealth during

his long and prosperous career.

Bála Báí was the daughter of Mádhú Ráo Sindhia. She married Raja Ráj

Begam Bála Báí.

Chandra Desmukh Bahádur, to whom, in the thirty-first year of the reign of Sháh Alam, thirty nine vil-

lages were granted by farmán. Raja Ráj died soon after, and in the thirty-sixth year of Sháh Alam's reign (A. D. 1796) the *jáytr* was assigned by letters patent to the children of Bála Báí. Shortly after, when hostilities broke out between the British power and Gwalior in the time of Daulat Rao Sindhia, the *jáytr* was sequestered, but on the 30th December, 1803, was again released and assigned by a *sanad* under the Land of General Malcolm, bearing date 18th February, 1804, from which time the *jáytr* was uninterruptedly possessed by the Báí Sáhiba until her demise in August, 1833, when it was attached by Government. Of the Bála Báí's 39 villages 36 were situated in the tract comprised in the present district of Meerut, *viz.*, in parganah Meerut 10, in Jalálabad 25, and in Saráwa one. The net demand from these villages was Rs. 75,000, and the collections about Rs. 60,000. Kewal Nain, a dependant of Sindhia's, had seven villages in *jáytr* in 1807, but they soon lapsed. The king of Delhi also held ten villages, the Begams of the royal family sixteen villages, and the king of Oudh ten villages, all of which were resumed after the mutiny.

The history of Begam Sumru and the Sardhana fief has already been given

Begam Sumru.

in detail in the introduction. Here it will be only

necessary to briefly sketch the principal events so as to connect them with the local history of the portions of the fief that lie in this district. The founder was Walter Reinhard, a soldier of fortune, infamous for the part he took in the Patna massacre in 1763 A.D. In 1777 he obtained the parganah of Sardhana and the neighbouring lands as an assignment for the support of his battalions. He died there in 1778, and was succeeded by his widow, the Begam Sumru. In 1781 she was baptised under the name of Johanna, and in 1792 she married M. Le Vaisseau, and added Nobilis to her name. Her husband committed suicide in 1795, and for a time she lost all power, which fell into the hands of Zafaryáb Khán, a natural son of Sumru's.

Being restored in 1796 by George Thomas, she continued in sole management of her estate until her death, which took place in 1836. In 1802, five out of the six battalions she entertained joined Sindhia in the Dakhin, but the Begam herself submitted to the British after the battle of Dehli, and ever after remained loyal to

The Begam's possessions.

them. The Begam's possessions were considerable, comprising parganahs Sardhana, Baraut, Barnāwa, Kutāna, Budhāna or Burhāna, Jewar, Tappal, Dankaur, and Palāsu in the Duāb, and on the western side of the Jumna, Bādsāhpur, Hānsi, and Rānya. The estate was extremely wealthy and well provided with fine towns, such as Baraut, Dinauli, Barnāwa, Sardhana, Jewar, and Dankaur, and close by her dominions were the large marts of Meerut, Shāmlī, Kāndhla, Bāgpat, Tikri, Chhaprauli, Tānda, Khūrja, Shahdara, and Dehli. The net demand of her parganahs in this district alone during the last 20 years of her rule averaged Rs. 5,86,650 including cesses, and her collections during the same period averaged Rs. 5,67,211. Mr. T. C. Plowden, in his settlement report of 1840, bears high testimony to the Begam's energy and ability for administration.

The Begam's army¹ was composed of infantry, artillery and a complement of cavalry. Three battalions of infantry, 1,550 strong,

The Begam's army.

were usually stationed at her frontier stations, Hānsi and Rānya. The monthly cost of this force was somewhat under Rs. 12,000. All her artillery with some infantry and cavalry were stationed at Sardhana. The strength of her artillery may be inferred from the fact that 236 bullocks were attached to this branch of her army. At the time of the Begam's death her force were commanded by General Regholini and eleven other European officers, one of whom was a son of the celebrated George Thomas.

The Begam endowed the Catholic Churches of Calcutta, Madras, Agra, and

The Begam's charitable donations.

Bombay with the following sums in Company's rupees respectively:—Rs. 32,000, Rs. 31,000, Rs. 28,700, and Rs. 31,800, and the Sardhana Cathedral with Rs. 95,600; St. John's Roman Catholic College with Rs. 95,600; the Sardhana poor with Rs. 47,800, and the Meerut Catholic Chapel with Rs. 12,500. Besides these donations a lakh of Sonat rupees was made over to the Bishop of Calcutta for charitable purposes. The Begam also subscribed liberally towards Hindū and Musalmān institutions. She

Places of residence.

had four places of residence, viz., at Sardhana, where her palace was completed in 1834, at Khirwa, at Jalāl-pur, at Meerut, and at Dehli. Zafaryāb Khan, the son of Sumru, died in 1802,

Heirs.

soon after the Begam's restoration by Thomas, leaving one daughter, whom the Begam married to Mr. Dyce, an

¹ An interesting account of the formation of the regular corps commanded by Europeans in the service of Native States at this time was compiled by Major L. F. Smith of Sindhia's service, Calcutta, 1804. Later on the Begam's artillery comprised 384 gunners and 85 officers of all grades; cavalry, 192 sawārs and 44 officers; orderlies, 192 men and 44 officers; infantry, 1,920 rank and file and 510 officers of all grades. The Begam had 44 pieces of cannon. She kept up a small force at Bhawāni, one of her trans-Jumna towns.

officer in her service. The issue of this marriage was—(1) David Ochterlony Dyce Sombre, who married Mary Anne, daughter of Viscount St. Vincent, by whom he had no issue. He died in Paris in July, 1851. In August, 1867, his body was conveyed to Sardhana and buried in the cathedral. (2) A daughter who married Captain Rose Troup. (3) A daughter who married Paul Salaroli, now Marquis of Briona. The present owner of Sardhana is the Hon'ble Mary Anne Forester, the widow of David Ochterlony Dyce Sombre, and the successful claimant in the suit against Government which has recently been decided in her favour.

The following statement shows the extent of the holdings of peasant proprietors (*khudkásht*), tenants with rights of occupancy (*maurási*), and tenants-at-will (*ghair-maurási*). It will be seen how the proportion of the three classes of holdings differs in different parts of the district, and this difference is the more striking in conterminous parganahs, *e. g.*, in the parganah of Garhmuktesar, peasant proprietors cultivate three-eighths of the entire cultivated area, while in the next parganah, Páth, only one-eighth is cultivated by them. Again, the land cultivated by tenants with rights of occupancy in parganah Chhaprauli is to that cultivated by tenants-at-will as three to five, while in Baraut the proportion is as three to nine, and in parganah Meerut as seven to nine. Parganahs inhabited by Játis will be found to have the largest proportion of *khudkásht* area. The average size of the holdings, too, varies very considerably: *khudkásht* holdings vary from five acres in Sardhana tahsil to eight acres in Gháziabad, and *maurási* holdings from one and three-quarter acres in Sardhana to six and a quarter acres in the Mawána tahsil. Very many cultivating proprietors have their patch of *khudkásht* or seer land, another patch of which they are tenants with right of occupancy, and a third of which they are mere tenants-at-will:—

Tahsils.	Cultivating proprietors.		Tenants with rights of occupancy.		Tenants-at-will.		Fash years.
	Holdings.	Acres.	Holdings.	Acres.	Holdings.	Acres.	
Sardhana, ...	15,350	79,244	5,333	9,400	9,614	29,165	1278
Ghāziabad, ...	14,161	110,172	6,151	48,365	9,892	60,203	1276
Meerut, ...	11,683	60,179	19,544	48,226	15,011	61,884	1278
Mawána, ...	7,556	63,910	8,332	50,144	7,148	35,773	1276
Hápur, ...	10,276	69,340	14,060	81,912	9,613	39,822	1278
Bágpát, ...	22,197	122,072	9,459	23,970	17,306	57,058	1278
Total, ...	82,533	504,947	53,870	262,017	68,584	233,940	...

Bilmukta tenures, called in this district *chukauti*, where tenants hold at fixed rates, are not common, and in the foregoing statement Holdings at fixed rates. are included among tenants with rights of occupancy and tenants-at-will as they happened to fall under either category. Formerly these

fixed rates appear to have been even rarer than they are at present, and now they are not popular. Where these rates are met with it will be found that they depend on contracts continued from year to year. In 1807 ten acres was considered an average holding for a peasant cultivator, it would now be con-

Size of holdings. sidered small; thirteen acres a middle-sized holding, and nineteen acres, or thirty bighas, a large holding.

Ten acres can be cultivated by a plough with a single pair of oxen, and is called a *kuchcha hal*. For from ten to nineteen acres a *pukka hal* or plough is required, with two pairs of bullocks; generally two superior cultivators keep two pair of bullocks between them. This system is called *dangwára*, and the sharers in the oxen are known as *dangwáris*. A *pukka hal* is supposed to be one and a half times as effective as a *kuchcha hal*.

In the following calculation as to the condition of a holder of five acres or Productive capability of eight pukka bighas in this district, the season is supposed to be a fair one and the land inferior *mattiýár* or small holdings. posed to be a fair one and the land inferior *mattiýár* or good *rausli* irrigated. The market price of grain is taken at Re. 1-8 per maund. If the produce per bigha, during the *rabi*, be eight maunds the bigha, the result for eight bighas will be grain valued at Rs. 96. As a rule, one-third of the cultivated area is left fallow in the *kharíf*, and the crops are inferior to the *rabi* crops and of less value, whilst on the other hand cotton is a remunerative crop. Sugarcane occupies the ground nearly the whole year, and is only hypothetically a *kharíf* crop. The produce of eight pukka bighas, after allowing for fallow, may be set down as worth Rs. 50 for the *kharíf*, making a total outturn of Rs. 146; against this must be set the outlay on rent, water-rate, seed, implements, &c. The cattle are fed on the chopped straw and stalks of the crops. The rent of inferior *mattiýár* and good irrigable *rausli* is about Rs. 3-12 per bigha, or Rs. 30 for five acres. The water-rate at Rs. 3 per acre amounts to Rs. 15 for the *rabi*, and, say, one-third of the *kharíf* is watered, or a total of Rs. 20, and for seed Rs. 5 for the *rabi* and Rs. 3 for the *kharíf*, giving a total expenditure of Rs. 58. The profits or net income is therefore Rs. 7-5-4 a month. This does not allow of interest on capital invested in stock and implements. The average of the tahsildárs' estimates is Rs. 7-12 a month, and the opinion of the late Karím Ali Khán of Gháziabad fixes the profits of a five-acre holding at Rs. 7 per mensem. The gross monthly income of a cultivating proprietor, assuming the land-revenue on fair irrigated land, is Rs. 8 9-4, but from this must be deducted 3 annas on account of village expenses and patwári's fees, thus leaving him a net income of Rs. 8-6 a month. The census statistics of 1872 give the average number of acres cultivated by each male adult agriculturist at 5-8.

Most of the peasantry are never out of debt from the time they begin life Condition of the culti- to their death. The cause of this is the enormous vators. rate of interest exacted from them by native mahájans

and sabukárs. A cultivator, if not a proprietor, who borrows money for ever so short a period less than a year has to enter into a '*badni sindya*' contract, by which he engages to give four annas on every rupee borrowed by some certain date within a year, and in addition to this he binds himself to sell his corn to the banker at from one to two sers above the market rate of the day when the grain has been winnowed. Thus on an ordinary loan for six months a cultivator has, as a rule, to pay interest at the rate of 60 per cent. per annum. The cultivators are now so indebted that mahájans have become necessary to their existence. In many villages one mahájan pays over a lump sum to the lambardár on behalf of more than half the small co-partners, from whom he exacts a monstrous interest and eventually takes over their land.

The census report of 1865 shows a landless unskilled population of 200,000,

Agricultural labourers. of whom seven-eighths are Chamárs and the rest are for the most part Korís, Kahárs, Malís, and Kumhárs.

Of these it would appear that about 130,000 hire themselves as farm labourers. The census of 1872 divides the agricultural population into landowners and cultivators, already noticed under the head of 'occupation,' and gives no indications by which we may distinguish the farm labourer from the cultivating tenant. But taking the Chamárs, who number 197,273 souls, and other similar castes, there cannot be less than 250,000 persons belonging to the rural labouring population. Many of these till small patches of land on their own account, and only hire themselves out to eke out the resources of their own cultivation. Except in the *zabti* crops, viz., safflower, *gawár*, *chari*, sugarcane, tobacco

Agricultural wages. and cotton, the labourer gets a share of the crop and perquisites. A labourer with a wife and two children

gets usually from one-seventh to one-tenth of the crop. If alone, from one-tenth to one-sixteenth. His perquisites are the *hulyák*, which is 25 sers of grain per 100 maunds. (This word is probably '*nali ka hak*.)' Every day while harvest lasts each labourer gets a *pili* of grain, equivalent to two sers, and every third day a *gaihra*, equivalent to ten sers. On the first day of ploughing in Asárh the labourer gets ten sers of grain called the "*god ka andj*," so called because the earth is then pricked or furrowed by the plough. If the ground is *do-fásh*, i. e., bears two crops in the year, he gets in Kárttik (October-November) 25 sers more, then called the "*menr ka andj*," from *menr*, the border furrow of a field. In some villages, too, it is customary to give to the head of the family a loaf of bread every day, and at the end of the year, usually about the end of Kárttik, a *kamal* (blanket) and *chádár* (sheet). When *kapás* or cotton is picked the pickers get either one-seventh or a one-eighth share, and if the crop is small, as much as a quarter share. In gathering *kusúm* or safflower, for every ser picked the labourer gets a ser of barley or maize. For cutting off the leaves of the sugarcane and preparing the stalk for the *gankat* the wages are 16 of the best

canes and as much *agaula* or refuse leaves as the labourer can carry away. For labour in cultivating the *zabti* crops above named the wages are generally in money. If the labour required is only occasional the rates are from two to two and a half annas per diem. If the labour must be continuous, wages range from Rs. 3 to Rs. 4 a month, but more usually the labourer gets Rs. 2 per month and a four-ounce cake of bread per diem, and his wife and children one rupee a month and a three-ounce cake daily each. In harvest time, with grain and *bhāsa* (chaff or straw) the labourers get as much as six annas a day. The first fruits of grain given to Brahmans are called *soāri*. The payment in kind to a labourer is called *lāi*. The gleanings of a field are the due of the labourers' children (*siliyārian*). The labourer's duties are ploughing, watching the crops, looking after the cattle, cutting fodder, collecting the cowdung on the land and plastering the zamindār's house. Women and children are very largely employed in field labour. Jātui women with their families work on their husbands' lands, and to this the flourishing condition of the Jāt community is in a great measure to be attributed. It is a great pity that Native Christians do not permit their wives to labour in the fields, and a still greater misfortune that they are encouraged in their folly. The women and children of a labourer get half wages.

The condition of the agricultural labourers has greatly improved. The Condition of the labour. Chamārs, who were formerly in a state of serfdom, ing population. have almost entirely emerged from it. Even now however cases are constantly coming up in magisterial courts showing that the struggle is still going on. Not unfrequently a Chamar or other labourer brings a charge of criminal trespass or assault against his zamindār with whose family his fathers have been for ages *adscripti glebæ*, on the ground that on refusal to work he was summarily ejected from his house and beaten. The reason of this is that the labourer's social status has been bettered and his wages increased. Mr. Plowden remarks that there can be no doubt that a rise in wages is taking place, and secondly, that there has been a very marked disturbance in the history of prices. The rise in wages may be most clearly seen by taking the comparative earnings of unskilled labour, as unskilled labour is most readily affected by the causes at work to produce a permanent rise in wages. The wages of coolies in this district have increased 133 per cent. between 1858 and 1868, a greater increase than is found anywhere in the North-Western Provinces except in Jalaun. Mr. Forbes has shown that at harvest time the field labourer has received wages in kind equal at market rates to 8 annas a day. This is due to the independence acquired by Chamārs, which permits them to select their own masters, either in their own village or elsewhere. This independence has been brought about by the levelling nature of our legislation, recognizing as it does no distinction in class and applying English principles of law to Indian circumstances and society; secondly, by partition laws

in some degree ; thirdly, by our rent laws, which sever the link which bound the zamíndár and his labourers together, and especially by Act X. of 1859, which gave rights of occupancy to many who would otherwise in the ordinary course of things have remained tenants-at-will; fourthly, by the great demand for labour on the Ganges Canal since 1840, and on the lines of railway which meet at Gháziabad; and fifthly, by the impetus given to high farming by the present high price of produce. In 1872 the contractor for the Jumna embankment in the parganah of Loni gave six annas a day to the most able-bodied of his beldárs, who were mostly of the Kori and Kúrmí caste, and four annas a day to the majority of the rest, who are Chamárs. Mr. Plowden writes :—"Last rains and cold weather (1870-71) I passed through a tract of country formerly (15 years ago) wretchedly cultivated, and now brought to the highest pitch of good farming." This tract is one inhabited by Gújars, who have now for many years been showing an aptitude for farming for which they never before received credit. In towns, too, the conditions of artizans and masons has wonderfully improved, though in villages their position is said to be retrograde. Another very important cause of increase of wages must certainly be increase in the price of the barest necessities of life, for a due supply of food is a condition precedent to the very existence of the labourer.

The following statement will show the rent-rates of the present settlement fixed, as they are in these villages and generally elsewhere, according to the character of the soil as well as on the fact of the land being irrigated or not. The rent-rates of Sir H. Elliot's settlement based on the irrigation or non-irrigation of the soil are also entered in the statement. For the purpose of drawing a fair comparison, one good level village has been selected from each tahsíl. The enhancement in rents is due to the increased value of agricultural produce, and in a great measure, too, to the fact that land is being constantly brought into the market and sold to money-lenders, who are harder on their tenantry than the old proprietors.

Rates of rent per acre on irrigated and unirrigated land at the present settlement, 1872.

Name of village.	Irrigated from wells.				Irrigated from tanks, &c.			
	Matyár.	Dákar.	Rausli.	Bhúr.	Matyár.	Dákar.	Rausli.	Bhúr.
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
Tíkri (Barnáwa),...	8 5 5	5 11 4	5 12 3	5 12 3	7 9 1	4 12 6	5 15 3	5 15 3
Rasútpur (Meerut),	7 13 6	5 10 10	4 15 3	3 15 6	5 11 6	4 12 6	4 4 8	3 15 2
Masúri (Dáwa), ...	4 9 3	3 13 9	3 4 9	1 9 9	3 10 6	4 0 9	2 15 0	...
Dotal (Garhmuktesar), ..	4 7 3	3 3 9	3 2 3½	3 2 6	3 15 9	3 4 0	3 6 6	3 4 0
Kirthal (Chhaprauli), ..	8 10 6	5 13 6	7 13 3	4 12 0	8 5 3	4 13 4	5 6 9	4 10 8
Paríchatgarh (Kilhor), ...	7 13 6	5 11 6	4 8 6	3 5 4	5 2 0	5 2 3	5 1 6	...

Name of village.	Irrigated from canals.				Unirrigated.				Rent-rates at Sir H. Elliot's settlement in 1836.	
	Mattiyār.	Dākar.	Rasuli.	Bhūr.	Mattiyār.	Dākar.	Rasuli.	Bhūr.	Irrigated.	Unirrigated.
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
Tikri (Barnāwa),	9 6 7 5	7 9 5 6	10 5 6 10	5 6 10	5 2 4 3	10 3 3 12	11 3 2 3	6 6 5 3	8 3	
Rasūlpur (Meerut), ...	8 4 6 6	5 0 5 13	9 3 15 6	4 7 0 4	1 6 3 11	0 2 15 3	4 14 6	2 10 3		
Masūri (Dāsna),	4 0 3 4	4 3 2 15	0 1 9 9	2 12 9 2	8 6 2 1	0 1 7 0	4 0 0 2	5 0		
Dotai (Garhmuktesar), ...	4 5 6 3	3 6 3 6	9 2 1 3	2 7 9 2	6 5 1 13	8 1 3 7	3 4 0 1	13 0		
Kirthal (Chhaprauli), ...	8 5 3 4	13 9 5 6	9 4 11 5	5 10 0 4	11 9 4 10	2 4 11 9	8 0 6 4	0 0		
Parichhatgarh Kithor), ...	6 9 0 4	13 9 4 2	3 4 15 2	3 2 6 2	0 3 2 5	3 1 5 0	3 9 7 2	0 0		

The revenue-rates for each parganah, which are presumably one-half the rent-rates, have already been given. The following table shows the assumed average rent-rate per acre of each parganah at both the past and present settlements :—

Parganah.	Rent-rate.		Parganah.	Rent-rate.		Parganah.	Rent-rate.		Parganah.	Rent-rate.	
	Former.	Present.		Former.	Present.		Former.	Present.		Former.	Present.
	Rs. a. p.	Rs. a. p.		Rs. a. p.	Rs. a. p.		Rs. a. p.	Rs. a. p.		Rs. a. p.	Rs. a. p.
Bāgpat,	2 12 5	4 4 3	Lonī,	2 3 3	3 1 3	Jalālābad.	2 9 3	3 13 4	Sarāwa,	2 10 5	3 5 10
Baraut,	4 13 3	5 12 10	Barnāwa.	4 9 10	5 2 1	Hāpnar,	2 12 8	3 7 0	Pāth,	2 14 3	3 5 2
Chhaprauli,	5 0 8	6 3 4	Meerut,	3 5 6	4 14 10	Sardhana.	4 9 8	5 2 6	Hastināpur.	2 11 2	3 12 5
Kutāna,	4 14 11	5 8 6	Dāsna,	3 0 7	3 15 6	Garhmuktesar.	2 6 4	2 10 6	Kithor,	2 2 1	2 15 0

These rates, being average rates, are only of use in comparing the general rent-rates of the district with other districts. For the ascertainment of the particular rates in each village the No. II. statements of the settlement record must be consulted.

Elliot in his settlement report, 1836, writes :—“ In this district *batai* or division of crops chiefly prevails, and if money rates are in existence they are formed merely by distributing the

Batai rates.

Government demand by a *bickh*." At the present time *batdi* rates are rarely met with, for where they did exist they were generally commuted into cash payments during the settlement operations of 1864-70. The *batdi* rates that do, here and there, prevail are—(1) *adhdadh* or *nisfi*, where the zamindar and the cultivator take one-half each; (2) *bakoul* or *pachdu*, where the zamindar takes two shares out of five; (3) *tildra* or *sirana*, where the cultivator gets two shares out of five; (4) *chauhara* or *chaharum*, and so on. Act X. of 1859 has resulted in a

Effect of Act X. of 1859. general enhancement of rents throughout the district. Since the Act came into operation up to the end of 1871, about 3,000 suits for enhancement of rent have been entered in the Revenue Courts. During the settlement operations, out of 2,039 suits for enhancement of rent, 1,586 were given in favour of the zamindar against the cultivator, while out of 50 suits for abatement of rent, in 21 cases a decree was given in favour of the cultivator. The smallest share the zamindar ever gets is one-seventh of the produce. During the settlement operations, 841 suits were filed for commutation of payments in kind into cash rent-rates. In 612 cases out of these, commutation was decreed. Besides the enhancement cases decided in Court many hundreds of cases have been decided between the parties without the intervention of any revenue officer. Now that the settlement work is completed, very many landlords, whose tenants have obtained for themselves the commutation of payments in kind into cash rates, are suing them for enhancement of rent in the Collectors' courts.

The statistics connected with the price of land have been obtained from an examination of the record of cases relating to the change of entry of proprietary right, taken promiscuously from the record-room of the Collector's office and relating only to private sales of assessed land. In forced sales land frequently is disposed of for less than its true value, while in the sale of confiscated land the Government has frequently considered less the value of the land than the services and character of the purchaser. The value per acre of land in 1860, in ten cases examined, averaged Rs. 35-8, in 1865 Rs. 31-6, and in 1871, on a similar inspection of ten cases, Rs. 47-2. In all these cases all the land was cultivated. From the ten sale records of 1871 that were examined, it appears that the value of land is 26½ times the yearly land-revenue.

Attempts have several times been made to gauge the distribution of the produce between the Government, the landholder, and the cultivator. The returns¹ for 1864-65 are considered

¹The returns for 1865-66 contain an interesting table, compiled by Mr. Parker, C. E., showing the actual weight of the grain, chaff and straw of crops taken from a specified area in 36 irrigated villages in the Meerut Canal Division. As these tables were framed on actual weighing, they form a valuable basis for produce calculations.

untrustworthy in this district, and turning to those for the following year, we find the total cultivated area recorded as 1,058,275 acres, yielding a produce valued at Rs. 1,02,41,758, or Rs. 9-10-10 per cultivated acre. The cultivators' share of this is set down at Rs. 64,64,416, or Rs. 6-1-8 per acre; the zamindars' share, including the Government revenue, at Rs. 37,77,342, or Rs. 3-9-2 per acre. Deducting the Government demand, or Rs. 18,27,012, falling at Re. 1-11-7 on the cultivated acre, the balance, or Rs. 19,50,239, at Re. 1-13-7 per acre, will represent the zamindars' profit. Comparing these results with the statistics obtained at the census of 1872, we find the average holding of each male adult agriculturist to be 5·8 acres, for which he pays Rs. 3-7-10 per acre to the landowners. The revenue is put down at Rs. 2-1-3 per acre, or with cesses Rs. 2-4-5 per acre, leaving the landlord's profits as low as Re. 1-3-5 per acre. The difference in the incidence of the revenue is due to the fact of the revenue-free cultivated area being included in the former return and the non-completion of the settlement. In 1872 the land-revenue amounted to Rs. 21,84,310, or with cesses Rs. 24,00,920; the amount paid by cultivators in the same year was Rs. 37,41,286. The general result of these inquiries show that the cultivator receives close on twice as much as the Government and the landowner taken together. From this he has to support himself and family, provide seed and implements, and lay by, if he can, for bad seasons.

In a former page I have considered the wages of agricultural labourers. I

Unskilled labourers and shall now refer to the rise in the wages of unskilled labourers and artisans in connection with the general rise in prices. In a bill submitted for the repairs of the Collector's office, early in 1815, the following rates of wages per diem are entered:—bricklayers 3 annas; coolies 1 to 1½ anna; able labourers and water-carriers 2 annas. Again in September, 1815, I find bricklayers receiving 2½ annas, carpenters 2 annas, and coolies one ser of flour and one pice a day. Flour then cost 2½ pice a ser, so that the coolies, 600 in number, received less than one anna a day. The coolie rate remained the same up till 1850, when it rose to 2 annas a day for a man and one anna for a boy; the ordinary rate for a man is now 2 annas to 2½ annas, and for a boy 1½ anna to 2 annas. In some cases they are able to demand much more. In 1811 palki-bearers received 3 annas a day, bricklayers 2½ annas, water-carriers, carpenters and beldars 2 annas, and coolies 1½ anna. In 1850 the wages of bricklayers rose to 3½ to 4 annas, the rate at present is 4 to 5 annas. The cold-weather rate, while the days are short, is usually 4 annas, and for the long days of the hot-weather 5 annas. In 1850 the daily pay of carpenters and blacksmiths was 4 annas, now the rate is 5 annas. The price of roofing tiles in 1809 was Rs. 120 per 100,000. The rate is now for tiles of the same size Rs. 150. Since 1809 the price of wrought-iron has fallen from Rs. 25 the maund to Rs. 7-4 for Hindustani iron, and Rs. 8-8 for

English iron. Bambus are now considerably cheaper than they were fifty years ago. The price of *ghī* or clarified butter, as elsewhere stated, has risen considerably.¹ Mr. Dumbleton, writing in 1809, says:—"The greater part of the *ghī* consumed in these parts is imported from the west side of the Jumna, as is also the salt."

Mr. Dumbleton in the same year writes:—"The price usually taken at the mills for reducing grain to *dta* (flour) is two sers in the maund, or five pie. The present rate is six pie per *dhari*, or five sers. Taking 25 sers for a rupee as the present nominal rate, and 35 sers as the nominal rate in 1809, it will be seen that the price of grinding flour has increased 150 per cent. As noticed under the Sahāranpur district, the hire of bullocks in 1803 was Rs. 2-8 per mensem, rising in 1805 to Rs. 3-8; it is now fixed at five annas a day for each bullock, or seven annas a day to include return hire. The rates now vary from Rs. 6-8 to Rs. 13 a month, showing the impetus given to agriculture from the protection of a powerful and peaceable Government.

In 1804, Colonel David Ochterlony, writing from Dehli, alludes to a prevalent scarcity of grain, and requests Mr. Leycester, the Collector, to "send, if possible, 50,000 maunds of wheat to Dohli if it can be purchased at a rate which, including carriage, will admit of its being sold for 27 sers the rupee." Writing a few days afterwards, he says:—"The scarcity of grain is very great. Have the wheat sent over on the public account. A measure of this kind can alone alleviate the existing evils." In 1805 wheat sold at 18 sers for the rupee, and gram at 20 sers in Meerut, and the Collector characterises the prices as exorbitant. Again in 1807 the distress was considerable at Meerut, after a very plentiful season in the preceding year. In 1806 (1214 *faslī*) the following were the rates per rupee:—gram, 70 sers; wheat, 50; barley, 80; rice of first sort, 50; rice of second sort, 80; maize, 100; *joār*, 50; *bājra*, 60; and at the close of 1809 gram was 23 sers and moth 42 sers per rupee. Yet, earlier in the year, the Government had been making its collections under the Collector's immediate superintendence at the town of Manglaur, in the present district of Sahāranpur, at the following rates:—rice, 100; *urā*, 80; *joār*, 90; wheat, 60; gram, 60; and barley, 80 sers for a rupee. In 1817 the Collector reports that

¹An old price list (September 26, 1805) gives the following as the average prices per local maund, for the years 1799 to 1804:—

Dry tobacco, ...	...	Rs. 8	Charcoal, ...	...	Rs. 4
Hukka tobacco, ...	...	" 6	Safflower, ...	...	" 16
Turmeric, ...	...	" 7	Cotton seed, ...	...	" 4
Opium, ...	...	" 320	Kapās, ...	...	" 2
Sulphur, ...	...	" 14	Blankets, ...	...	" 16
Saltpetre (1st) ...	...	" 3	Hides, ...	...	" 8
Ditto (2nd) ...	...	" 2	Iron, ...	...	" 7
Country paper, ...	...	" 27	Jast, ...	...	" 32
Ghi, ...	...	" 11	Lead, ...	...	" 22
Oil, ...	...	" 4	Zinc, ...	...	"

wheat sold at 19 sers for the rupee and other grain in proportion. The next great season of scarcity was in August, 1819, when the rates were : wheat, 18 sers per rupee ; gram, 22 ; barley, 23 ; *urd*, 23 ; *moth*, 23 ; *joár*, 25, and maize, 25 ; just before the cutting of the *kharij* (11th August) that year. In 1820 wheat, at Hápur, sold at 18½ sers, at Dásna at 19½ sers, whilst gram at Dásna was 26 sers, *urd* was 29 sers, and *moth* was 28½ sers for the rupee.

The average price of wheat in Gháziabad from 1831 to 1841 is given in detail under the town notice. It averaged 28½ sers per rupee. Mr. Plowden does not think the rise is of a permanent character, but that the advance in prices which has been so marked during the last ten years is nearly wholly due to the bad seasons of 1860-61, 1865-66, 1867-68, and 1869-70. Up to 1849 it will be found that the average price of wheat was 30·1 sers per rupee, from 1850-59, 36·6, and from 1860-69, 21·3 sers per rupee. The following statement shows the average annual prices of the staple crops of the district from 1850 to 1870 inclusive. A second table gives the monthly average for 1860 and 1868-69.

Price of the principal crops in so many sers per rupee.

Year.	Wheat.	Gram.	Barley.	Indian-corn.	Joár.	Bája.	Másh.	Múng.	Moth.	Rice.	Gúr.	Oil.	Ghi.	Cotton.
1850, ...	42½	50	...	50	...	...	40	...	...	17	16	12	2½	4
1851, ...	42½	50	...	...	...	...	...	...	...	18	16	14	2½	5
1852, ...	30	34	...	50	...	...	30	...	...	20	11	12½	3½	3
1853, ...	28	25	...	...	...	...	28	...	...	11	17	...	2½	7
1854, ...	35½	31½	...	...	...	...	27	...	...	17	18½	8	2½	6
1855, ...	47	55	...	...	...	...	...	...	...	24	18	8½	2½	6
1856, ...	38½	38	50	50	50	45	45	50	50	23	18	7½	3½	6½
1857, ...	43	44	60	...	...	...	42	35	...	20	18	8	3	4
1858, ...	32	42	40	40	...	...	43	...	...	22	14	8½	3½	4½
1859, ...	27	33	35	33	...	...	35	30	...	13	16	8½	2½	3½
1860, ...	9½	...	11	10	13	12	10	10	...	11	11	5	2½	3½
1861, ...	27	24	20	32	...	30	13	13	...	18	9	5½	2½	5½
1862, ...	39	35	65	60	...	...	41	...	...	18	12	4	2½	4½
1863, ...	22	22½	25	25	...	27	25	...	...	16	12	3½	2½	1½
1864, ...	22½	25	27½	23	...	...	23	23	...	12	12	6	2½	11½
1865, ...	22	2½	...	27½	...	...	24	27	...	11	16	9	2	3½
1866, ...	22	25	32	30	22½	...	27½	20	...	12	15	8½	1½	3½
1867, ...	24	21	33	28	...	...	27	30	25	16	7	6½	1½	4
1868, ...	14	14½	20	...	...	...	15	15	...	...	8	6½	1½	2
1869, ...	11½	9½	15	27	...	...	22½	18	...	10	8½	5	1½	2½
1870, ...	21	16	35	35	...	...	27½	27	...	14	12	5½	1½	2

The rate for *gúr* in 1807 was 18 sers the rupee. The average rate during the past eleven years has been 12 sers. The price of oil has increased to a greater extent, perhaps, than that of any other product. In 1806 *sarson* or mustard-oil was selling at 40 sers the rupee, in 1850 at 12 sers, in 1860 at 5 sers, in 1870 at 5½, and in 1872 at 3 sers the rupee. This is to be attributed in a great measure to the recent blights

Sugarcane.

which afflict and very frequently utterly destroy the plant. The *tára* species is said to be more affected than the *sarson*.

The famine of 1860-61 was, however, terribly severe, and had it not been for the

Famine of 1860-61. vast railway works then being made in the neighbourhood of Gháziabad the lives of thousands must have been lost.

Near Gháziabad a mile of high embankment was thrown up by 25,000 famine labourers in six weeks. A good test of the severity of famine is the extent to which cultivators sell their cattle : many thousands of cattle changed hands in the famine year of 1860-61, while in 1868-69 the transfers of cattle may be counted by hundreds. From the following statement it will be seen that the famine of 1868-69 reached its height in December, 1869, when the following rates per rupee prevailed : wheat, 10 sers : gram, $9\frac{1}{2}$; barley, 14 ; and rice, 9 sers. Besides the fact that rates in 1860-61 were higher than these, it must be remembered that since that period wages have been constantly rising. Prices have returned again to their ordinary rates, viz., wheat, 26 sers per rupee ; barley, 33 ; joár, 34 ; bájra, 34 ; and gram, 25 sers. Famine rates are reached in this district when wheat sells at 16 and barley at 20 sers the rupee, and when wheat sells at 11 and barley at 14 sers the rupee Government relief operations appear to become necessary.

		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Wheat, ...	{ 1860, ...	...	...	25½	20	22½	20	...	11½	11½	9½	10½	...
	{ 1868, ...	26	27½	25	26	28½	27½	26	21	12½	14½	12	11½
	{ 1869, ...	14½	12½	15½	16	18½	16	13	12	11½	11½	11	10
Gram, ...	{ 1860, ...	...	...	31	24½	26	22	...	12	19½	11½	12½	...
	{ 1868, ...	26	24	19	26	29	27½	28	23	13	16	12½	12
	{ 1869, ...	14½	12½	14	15	14	14	11	10½	9½	9	9½	9½
Barley, ...	{ 1860, ...	...	...	32	27	29	24½	...	15	13	10	10	...
	{ 1868, ...	38	38	35	40	42	42½	42	33	16	20	16	15
	{ 1869, ...	18	16	20	24	24	20	15	13½	14	13	10	14
Indian corn, ...	{ 1860, ...	...	...	...	...	...	...	...	...	...	...	13	12½
	{ 1868, ...	16	14	15	...	...	...	...	...	14	17½	17½	18½
	{ 1869, ...	...	...	27	20	20	19	...	15	13	12	...	...
Joár, ...	{ 1860, ...	...	...	26	...	...	...	...	...	...	...	13	13
	{ 1868, ...	13½	13	14	...	...	...	12½	13½	14	17	20	19
	{ 1869, ...	...	...	32	18	21	20	...	15	12	12	12½	...
Bájra, ...	{ 1860, ...	...	...	28	...	...	...	...	...	...	...	12	12½
	{ 1868, ...	14	13	...	...	...	14	...	...	16	...	...	16
	{ 1869, ...	...	...	7	7	7	6	...	9	9	9	9½	...
Rice, ...	{ 1860, ...	15	12	9	15	17	12	14	18	10	9	8	8
	{ 1868, ...	8½	8	8½	8	7½	8	8	7½	8½	9	10	9
	{ 1869, ...	...	...	...	...	...	...	...	...	...	...	...	...

The only trade returns are those furnished by the octroi statements of municipalities. The imports into Meerut city during 1870-71 were, in maunds, wheat, 221,550 ; sugar, 38,993 ;

Trade and manufactures.

other grains, 48,093; durgs and spices, 7,788; tobacco, 5,127, &c., the octroi duty on which amounted to Rs. 25,644. In Bágpat the income for the same period amounted to Rs. 7,850, of which by far the greater portion was levied on sugar.

The total import of sugar was 351,353 maunds, valued at Rs. 1,119,350, of which about one-fifth paid duty, the rest being exported elsewhere. The octroi on imports into Baraut was Rs. 4,415, and this was principally on grain. In Gháziabad the revenue amounted in 1870-71 to Rs. 5,723. A more detailed account is given under each town.¹

Before going into details it will be well to consider to what extent exportation is practicable in the district. The railway fare per maund per 100 miles is three annas, the canal fare² is one anna, by cart it is four annas and two pies. If the produce is going over 300 miles the railway fare chargeable is two annas and one pie. The charge therefore for 400 miles is eight annas and four pies. A country cart with four bullocks will carry on a metalled road forty maunds, and the charge per bullock is five annas a day. If wheat were here selling at a nominal price of Rs. 1-8 0, and in the centre of a famine district it were selling at Rs. 2-8-0 the maund, then grain (excluding charges) might be carried nearly 800 miles with advantage by rail, by water 1,600, and by cart 400. But taking into consideration the mean distance between the greatest centre of production and the centre of greatest demand, the above distances should be halved. Then allowing 25 per cent. profit to the carrier and 10 per cent. to the trader, or one-third of the whole item, it will be practically that railways control dearth to a limit of 266 miles, canals and rivers 550 miles, and roads 150. It has in emergent cases been found practicable to send grain to Calcutta, and in the famine years of 1869 and 1873-74 some Calcutta merchants had grain stored as far up-country as Khátauli in the Muzaffarnagar district. The principal articles of export are in sugarcane produce, *gúr* or condensed raw sugar, *ráb* or undrained raw sugar or molasses, *shíra*, *khánd* or drained sugar, *shakr*, *chini* and *míerí*, which go to Bhawáni, Riwarí, Dehli, and Rajputána. Indigo in the shape of *gúdh nil* or kidney indigo goes to the Panjáb, and cake indigo goes to Calcutta. *San*, *palsan*, and *sani* fibres are exported to Bikanír and Bhawáni. Tobacco, both dry leaf and manufactured to suit all classes, is exported to Dehli. Formerly large quantities of saltpetre were exported, but the trade has now altogether declined. There were formerly saltpetre works at Loni, Dásna, Hápur, and smaller ones at Sayána, Makanpur, Faríduagar, Píkhua, Bagamabad, Murádnagar, and Shamsheer. The pargana of Loni derives its name from the Hindi word *lon*, Sanskrit *lavana*, signifying salt. Wheat is exported in the direction of the

¹ See Meerut, Gháziabad, Bágpat, Hápur, Shahdara, Baraut, and Píkhua.

² In 1820 boat-hire from Garhmuktesar to Cawnpore was Rs. 45-8-0 per 100 maunds, and to Allahabad was Rs. 70-8-0.

greatest demand by rail, or water in excess of the home demand. There are large granaries at Gháziabad, Náhal, Pilkhwa, Hápur, Farídnagar, Begamabad, Shahdara, Murádnagar, Garhmuktesar, Mawána, Bágpát, Baraut, and Meerut. Dásna once had several, but owing to the percolation of canal water they have fallen into ruin. Sardhana has but four or five.

The Chamárs tan hides in this district. After tanning a cow hide is called *chám*, a bullock hide *charsa*, a buffalo hide *adhaura*, and goat and sheep skins *nari*. Leather is best tanned with *dhák* (*Butea frondosa*) bark, but the bark of the different species of *kkar* (*Acacia*) called *ásá* is more commonly used. Hides, horns and hoofs are sent to Calcutta and Cawnpore. There is a great manufacture of native shoes in Shahdara and Pilkhwa, the majority of which are exported to Dehli and southwards along the line of railway. The average outturn of cotton in a fair season is 55,000 maunds and of this 20,000 maunds are required for local consumption. The remainder is exported chiefly to Calcutta and Bombay. In bad seasons the produce is little more than sufficient for the requirements of the district: *e. g.*, in 1869-70 the actual outturn was but 27,551 maunds on an area of 43,229 acres. Meerut is a great cotton emporium, and here dealers congregate from other markets, such as Khúrja, Háthras, Cawnpore, and Mirzapur. *Kusúm* or safflower is largely exported to the neighbouring districts. It is not thought profitable to send the district produce to Calcutta to compete with the Bengal flower. Silk has been tried by Mr. Michel of the Dásna factory, but without success, though mulberry of every variety grows luxuriantly. The cause of failure is the hot winds, which the silkworm cannot survive. The heat here is dry, but in the moist and cooler climate of Bijnaur Major Kennedy has been most successful in the culture of the worm. There are six kinds of cloth manufactured in the district, but solely for local consumption; they are: *gárha*, *dosúti*, *tisúti*, red and blue; *kharua*, *dolara*, and *dhotar*, which last is a fine cloth. In 1832 good *gazi* sold at Rs. 5 the 100 yards, and inferior cloth at Rs. 4, while *dosúti* sold for Rs. 8. Oils may be classified as *karwa* and *mítha*. The *karwa* oils are those extracted from *sarson*, or the mustard plant, with adulterations. The *mítha* oils are those extracted from *tíl* and *tára* with adulterations of many sorts. There is very little *alsi* (linseed) grown. The principal medicinal oils are *ním* oil and an oil extracted from the shank bones of the gigantic crane (*L. Argala*.) and other birds of the wader tribe. It is considered a specific for rheumatism and gouty affections. Neat's-foot oil, too, is made in the larger towns. The principal imports into the district are metals of all kinds, salt, piece-goods, Kábuli fruits, spices from beyond the sea, *pán* and drugs.

In the Bágpát tahsíl there are indigo factories at Bilúchpura, Amínnagar Sarái, and Bajhéri. In tahsíl Gháziabad at Dehra, Masúri (Dásna factory), Harsawan, Kilhora, Rasáulpur,

Indigo factories.

and Yakútpur. In tahsíl Hápur at Baklána and Bhímiyári. In the Meerut parganah there is one factory on the Jáni road. In tahsíl Sardhana, near the town, is a small factory. In Mawána tahsíl there are none. Indigo is an old manufacture in this district, especially among the Muhammadan zamíndárs, but it languished soon after the British occupation. Mr. Elliot, writing in 1836, says, "indigo has never been cultivated to any great extent, and in consequence of the failure of the agency houses and the abandonment of the few factories in Púth and Sayána it is now seldom or never cultivated." The manufacture of indigo took no hold until Bengal began to fail in its supply. Not long after the Skinners established the Dehra factory, but never got good prices, seldom above Rs. 135 per maund, until 1863. Prior to this year other small factories had been set on foot in parganah Dásna, and by 1863 the exportation had reached more than 500 maunds, worth about Rs. 6,250: but 500 maunds is a good average for good and bad years. The exports now must be about 60 maunds, worth more than one lakh of rupees. The largest factory carried on under European supervision is at Dásna, which is now fitted to manufacture 500 maunds. The plant for this factory is sown by the tenants of the proprietor, who objects to the system of advances, and seeing that his tenants have no rights in the soil as security for such advances it would be unwise to encounter the risk. The cultivator receives a cash payment for his crop, delivered hitherto at his risk, the rate being about Rs. 20 per 100 maunds of 48 sers net. The rate for plant cut within a mile of the factory is Rs. 18 per 100 maunds. The average yield of plant per acre is above 60 maunds. The cost of production is Rs. 8-4, viz., seed 8 sers, at Rs. 5 per maund, Re. 1; rent at Rs. 3 per acre for one season, Rs. 3; irrigation, Rs. 2-4-0; cutting, cartage and ploughing, Rs. 2.

A factory intending to make 500 maunds of dry indigo must command 200,000 maunds of plant, or the produce of 3,300 acres, and must concentrate its working operations into 60 days, irrespective of time and labour in packing and despatching the dry indigo. The proprietor of the factory must have in his employ 150 carts with 600 bullocks, 100 men for cutting plant, and 250 Bhangís or Mehtars, who alone manipulate the fermentation and precipitation of the granulated pigment in this district. About 68 or 70 men and boys are employed in the operations of straining, pumping, boiling, and subsequent draining off the colour. Another gang of 36 men are employed in pressing, cutting, and stamping, with an auxiliary batch of six boys for the careful stowage of the prepared colour, to await the slow process of drying,—generally two months. Another large gang of labourers is daily required for the removal of the refuse plant called *stti*. This labour requires an organisation and careful administration to prevent any clashing, and it speaks much for the docile and tractable nature of the material employed that such an organisation is capable of being collected at short

notice, and kept at work with regularity, at rates only 25 per cent. above the current rates of labour. Mr. Michel pays his factory servants Rs. 5 a month, and sells flour to them at the factory, at a rate five sers in excuse of the ordinary market rate of the day. This indulgence leaves them no excuse to absent themselves. Besides the above an expenditure of 150,000 gallons of water per day is required to be raised and stored with an unremitting regularity and precision, and in the Dásna factory this is accomplished by five *lāos* or buckets working two wells, with a proportionate force of cattle power to secure its supply in a limited space of time, in order to permit of the water cleaning itself of salt and other impurities previous to its being brought into use.

In Bágpat tahsíl, at Daulatpur, *chúrís* (or common glass and paste bracelets worn by women of the lower classes) are made. They are also made in large numbers at Panehi. At Baraut iron vessels of various kinds are made, and at Barwála *charpáis* (or bedsteads) and other wooden articles. At Mandavi Bágpat reed chairs called *mundhas* are manufactured, and at Súb, in parganah Chhaprauli, saws and wood-splitting cleavers. In tahsíl Gháziabad, at Shikolpur (otherwise Khichara), ornamented elephant goads (*ankus*); at Makimpur and Gháziabad boots; at Farídnagar *pagrís*, chequered cloth and *balusáhi* sweetmeats, and at Jahúngírpur *pagrís* and *dosítí* cloth are made. In tahsíl Hápur, at Bahádurgarh, country stoneware vessels are made, and at the town of Hápur bolls and the brass work of *hukkas*. In Meerut parganah there are no manufactures worthy of notice. Elliot in his Glossary writes that "the best *kamals* (country blankets) in these Provinces are made in Alwar and in the neighbourhood of Mírapur in Meerut. The *sansla kamals* of the latter place sometimes sells as high as Rs. 25. It is made of the wool of lambkins shorn about three days after their birth. The *sansla* is from six to eight yards long and about two broad." This blanket is now quite unknown, and the most highly prized blankets in the district are those of Mírapura and Jawálágarh in tahsíl Sardhana. The village of Mírapura turns out about 100 blankets a day. Large numbers of these black blankets are made too at Láwar, in parganah Meerut. At the town of Barnáwa the printing of cloths is carried on to a very considerable extent.

In Bágpat there are no great fairs. The only two worthy of notice are those of Pura and Khékara. In Pura, a Ját village, is a temple of Parasrám. Fairs are held here in Phálgun (February-March) and Sáwan (July-August). The great fair is the one held in Phálgun called Shib Chandra or Shib Rátri, when the temple is sprinkled with water freshly brought from Hardwár and about 20,000 people assemble. The fair at Khékara is held in reverence of Búrha Bába. In the Gháziabad tahsíl the Sayyid Abdullah Sháh's *urs* is held at Bahta Hájipur in *Rabi-ul-awal* (not a fixed date). The fair is largely attended. At Dásna a largo fair,

formerly attended by the Delhi princes, is held in honour of Shaikh Alladiya Makhdum Sháh Wiláyat. A smaller one is held in Asauj (November) and Chait (March), at the Mandir Devi by the Hindús. At Nagla Káshi a fair is annually held, called Káli Devi, in memory of a *sati*. At Bajhera kalán a fair is annually held in May in honour of the Mardín-i-ghaib. At Síkri khurd great fairs are held in honour of Kalika Devi in Chait and Asauj. The offerings amount usually to Rs. 6,500, of which the Gosháins receive one-third and the sharers in the proprietary rights of the village the remaining two-thirds. At Sultánpur a fair is held in Phálgun and is attended by Játs; it is held in honour of Shám Jí. At Asálatpur the Síla fair is held in Chait and Asauj. In Hápur tahsíl the great *Puranmáshi* fair is held at Garhmuktesar at the end of the month of Kártik, but no great traffic is carried on. At the town of Hápur the "*Rámllá*" lasts ten days in Asauj. At Liháári there is a three-days' fair at the samádh, at the period of Basant Panchmi. In the Meerut tahsíl the *nauchandi*, or new-moon festival, is held for three days, commencing on the second Sunday after the *Holi* festival. There was formerly a temple of Nau-chandi Devi here, which was razed by Kutb-ud-dín Aibak 675 years ago, and a dargáh erected on its site about half a mile to the east of Meerut city. There is no trade carried on of any importance. During the Ashara Muharram (first ten days of the Muharram) there are large assemblages at the Karbala. The *Rámllá* lasts thirteen days, concluding on the tenth day of the last half of Asauj (*Bijaya dasami*). The Tilendi fair is held at the Súraj kund in Meerut on the second day of the first half of Chait, the day after the *Holi*. The Chhariyán festival, commonly called Záhír Díwán, is held on the ninth of the dark half of the month of Sáwan. In the Sardhana tahsíl there are three fairs worthy of notice: (1) at Sardhana in honour of Búrha Bába in March; at Barnáwa, at the Lúkhá Mandap, an *urs* is annually held at Sajar; and (3) at Nirpura a fair is held in the month of Jamádus-sáni. In tahsíl Mawána the only important fair is that of Niloha, in honour of Záhír Díwán or Goga Pír, who is said to have been carried into the earth in his chariot. About 25,000 attend the fair, each person carrying a small flag: hence the name *chhariyán* applied to this fair.

The following statement shows the traffic between Aligarh, Delhi and Meerut by road from 6 A. M. on the 20th October to 6 A. M. on the 20th November, 1871: only such traffic is noted as is lost to the railway, which amounted to Rs. 19,381 for 80 miles, or Rs. 2,422 per mile. This traffic record was taken as follows: Two native writers were stationed on the Hindan bridge near Gháziabad, over which all traffic to and from the Duáb to the Panjáb crosses; these men relieved each other every four hours in noting on printed forms the details of traffic of every description as it passed up and down to Delhi. A similar party was stationed at Hápur

which noted traffic to and from Meerut. All the details are recorded in the office of the Executive Engineer.

Road traffic between Aligarh, Meerut and Delhi, from October 20th to November 20th, 1871.

Detail of traffic.	Wheeled conveyances.	Goods calculated at lowest class for 80 miles distance.	Passengers at third class.		Total.
			Men or women.	Children.	
Up.					Rs.
Aligarh to Delhi, ...	4,516	Mds. 140,797 Rs. 19,311	27,289 Rs. 33,685	1,239 Rs. 768	53,764
Ditto to Meerut, ...	4,792	Mds. 32,642 Rs. 12,867	11,650 Rs. 14,563	1,076 Rs. 672	28,102
Down.					
Delhi to Aligarh, ...	4,693	Mds. 124,209 Rs. 17,080	29,292 Rs. 36,160	1,235 Rs. 766	53,156
Meerut to ditto ...	4,631	Mds. 76,995 Rs. 10,994	11,615 Rs. 14,394	1,054 Rs. 659	25,717
Total, ...	18,632	Mds. 434,643 Rs. 59,902	79,746 Rs. 98,802	4,604 Rs. 2,865	1,61,569

The traffic by rail in goods and passengers for the six months ending 31st December, 1871, to Meerut city was—passengers 32,260; goods, 123,536 maunds: from the city—passengers, 31,674, and goods 67,036 maunds. The traffic to Meerut cantonment comprised 17,684 passengers, and from cantonments 16,963 passengers. From Gháziabad there were 23,723 passengers and 723 maunds of goods, and to that station 28,395 passengers and 1,126 maunds of goods. The passenger traffic to Bogamabad was 6,788, and from it 5,395; the goods traffic was merely nominal. I have been unable to obtain any later statistics from the authorities of the Oudh and Rohilkhand Railway.

No large markets or centres of industry have sprung up on the principal route of traffic, nor are there any cases of small railway stations in this district having rapidly grown into seats of commerce, though Gháziabad is doubtless fast becoming a great emporium, and must eventually materially diminish the importance of Delhi as a mercantile town. A large proportion of the exports of the large villages in the north of parganahs Sardhana and Barnáwa, as Salawa, Tikri, and Doghat, is sent from the Khátauli

Railway Station in the district of Muzaffarnagar. The traffic on the rivers Jumna and Ganges is not great, and that on the latter chiefly consists in bringing down wood from the hills near Hardwar. The canal navigation has already been noticed.

In discussing the subject of material prosperity, reproductive accumulations of wealth will only be considered. In reality the mass of jewellery which women may be seen wearing is no evidence whatever of general prosperity. A people who would not hesitate to sell a birthright to celebrate a pompous marriage are not likely, in times of some adversity, ever to have scruples in hiring jewels from the village shopkeeper; and besides this, many of these jewel-bedecked women are loose characters, the vicissitudes of whose profession remove them from ordinary economic conditions. The signs of accumulation of wealth are the increase in the number of cattle, notwithstanding the decreasing necessity for them from the introduction of the canal and railway, and the increase in the number of carts. Mr. Michel, zamindar of Dásua, has, after some investigation, come to the conclusion that the number of carts in tahsil Ghaziabad has since the introduction of the railway been increased fivefold. When Mr. Michel first entered on his zamindari in Masúri there were two carts, there are now sixty; in Dásua there were four, there are now one hundred. Doubtless Mr. Michel's large indigo factory has given an impetus to the increase in this case, still the same tendency is everywhere apparent. The better housing of cattle is another sign of prosperity. For the better stalling of cattle and more careful storing of fuel, the area of the Masúri village site has been increased by more than one-third during the last few years. There has also been a general increase in facilities for transport both by carts and beasts of burden, thus permitting of marked competition with the railway. As an example, take the reorganisation of bullock-trains on such long lengths of road as from Ghaziabad to Aligarh, parallel with and passing through the same centres of commerce as the railway touches. There is an increase in the demand for imported manufactured hardware, *e. g.*, English pocket-knives, locks, carpenter's tools, anvils, and vices, and bar-iron for ploughshares. The wearing of English cloth is only in a minor sense an indication of general prosperity, for in all towns and at all small village markets (*penth*) English cloth is sold simply because it is cheaper than the native-made fabric. Hoarding does not prevail to the extent it did ten years ago, but still it is now very general. The crisis of 1866 has very seriously affected the estimation in which the English banking system was formerly held. The greater part of the accumulations from banking and commerce is employed as capital in trade, and in large or small indigo factories, and as capital for the purchase of land.

The current rates of interest in small transactions, where an article is given in pawn as security, is about half an anna per rupee per mensem, *i. e.*, $37\frac{1}{2}$ per cent. per annum. In large transactions with a mortgage upon moveable property, as carts, cattle, *kolhus*

(sugar mills) about three pies per mensem per rupee, *i. e.*, $18\frac{3}{4}$ per cent. per annum. In large transactions with mortgage upon house or lands or shares in estates it is 12 per cent. per annum. Petty agricultural advances upon personal security are made at half an anna per rupee per mensem, *i. e.*, $37\frac{1}{2}$ per cent. per annum. The same with lien on crops would be 25 per cent. per annum. Not less than six per cent. would be considered a fair return for money invested in buying an estate with the prospect of improvement confidently expected to continue.

There are no large native banking establishments out of the great military station of Meerut in this district and Dehli on the
 Banks. Panjáb side of the Jumna.¹ Market gardeners are the only cultivators that encourage these establishments. In the interior of the district petty Baniyas do all the money-lending. The only English bank in this district is the Bank of Upper India, the head office of which is in Meerut cantonments.

The local measures of time in general use are those common to the upper
 Duáb. Theoretically six *sáns* or breaths make one *pal*,
 Weights and measures. or the twinkling of an eye, and $2\frac{1}{2}$ *pal* one minute English. Sixty *pal* make one *ghari*; $7\frac{1}{2}$ *gharis* one *páhar*; 8 *páhars* one *din* (day); 7 *din* one *athwara*; and two *athwaras* one *pandrawara*. In village parlance the words *sikála*, *tarka*, *bhor* and *din nikale* are used to express 'morning'; from morning until noon as many *páhars* of the day as have passed. After twilight comes *din chhipe*, *shám* and *sanjh*; then *diya jale* when the lamps are lighted, *rát* or night, *pasari* just before daylight when the cows are fed, *pále phatan* the first glimpse of dawn, and *chiriyon ke wakt* when the birds begin to sing. Solid and liquid measures are the same. Eight *khashkhash* (poppy seeds) make one *chánval* or grain of rice; 8 *chánvals* make one *ratti*; 8 *rattis* make one *másha*; 12 *máshas* make one *tola*; 5 *tolas* make one *chhaták*; 16 *chhatáks* one *ser*; 40 *ser*s one maund. Eighty-four Government rupees weigh one *ser*. The different gradations between the *chhaták* and the *ser* are the *adhpau*, or half a quarter; *pau ser*, or quarter; *sawa pau*, or five-sixteenths; *derh pau*, or three-eighths; *adh ser* or half *ser*, and *tín pau*, or three-quarters of a *ser*. *Dhari* or *panseri* contains five *ser*s, and the *dhon* is half a maund.

Measures of distance and length have various terms in the lower ranks of the scale: thus, two *jau* make one *angusht*; 4 *angusht* one *chiya*; 6 *chiya* one *húth*, while by another account 3 *angusht* make one *girihi*, 4 *girihs* one *balisht*, and 2 *balisht* one *húth*. Again we have $5\frac{1}{3}$ *sút* making one *bhao*, 3 *bhao* one *tasu*, and 12 *tasu* one *húth*. Two *húth* make one *gaz*, and $1\frac{1}{2}$ *gaz* one *kadam* or pace:

¹The average rates of exchange in the early part of our rule were half per cent. on Dehli, two per cent. on Jákhaní and Benares, and three and a half per cent. on Calcutta.

2,040 *gaz* make one *gáo kos*, and 2,900 *gaz* one *pukka kos*. The *gáo kos* is so called as representing the distance the cry of a cow (*gáo*) is said to be heard. Other vague terms of distance are *úrwá*, an arrow's flight; and *goli ke tappa*, a rifle-shot. The land measure in common use is based on the English yard of 36 inches; the former local yard was the *Iláhi* yard or *gaz* of 33 inches. Three English yards make one *gatta*; 20 *gatta* one *jaríb*, and a square *jaríb*, or 3,025 square yards, makes a *pukka bigha*, and one *bigha* twelve *biswas* equal an English acre. The subdivisions of the *bigha* are 20 *biswas* make one *bigha*; 20 *biswánsis* one *biswa*; 20 *taswánsis* one *biswánsi*; 20 *answánsis* one *taswánsi*, &c.

In 1840 the East India Company's gold double and single mohars were current in this district, besides two-third and one-third mohars in gold, the Calcutta sikka mohar (19th *san*) and the Farukhabad mohar (45th *san*). The Company's silver double, single, half and quarter rupees, and the Farukhabad (old and new), Calcutta sikka, Benares, old Lucknow (known as *Machhli Sháhi*), Muhammad Sháhi, Dehli, Bareilly, Najfbabad, Chandausi, Bála Sáhi, and Srinagari rupees were all current and caused endless confusion in commercial transactions. For the copper coinage there were the Company's new anna pieces, the Mansúri or Masúri káni, lumps of copper, and the *kuldár*, Madu Sáhi and Trisula pice. The coinage now in circulation is that common to all India.

The classification of the land into assessable and revenue-free, with the Government revenue and its incidence on the cultivated area, has already been given in detail for each parganah in the district. The collections and balances from 1860-61 to 1873-74 have been as follows :—

Year.	Demands.	Collections.	Balances.	Particulars of balance.		Nominal.	Percentage of balance on demand.
				In train of liquidation.	Irrecoverable.		
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
1860-61, ...	17,82,599	15,41,663	2,40,936	2,10,413	29,951	572	13.51
1861-62, ...	18,11,172	18,03,428	7,744	2,871	4,127	746	0.42
1862-63, ...	18,15,598	18,07,331	8,267	52	8,215	...	0.45
1863-64, ...	18,21,128	18,07,096	14,032	6,635	...	7,397	0.77
1864-65, ...	18,24,442	18,17,919	6,523	262	...	6,271	0.36
1865-66, ...	18,26,249	18,18,482	7,767	92	...	7,675	0.42
1866-67, ...	18,25,521	18,16,716	8,805	...	998	7,807	0.48
1867-68, ...	18,15,554	18,00,828	14,726	294	280	14,152	0.81
1868-69, ...	18,08,994	17,56,257	47,737	10,459	...	37,278	2.09
1869-70, ...	17,83,965	17,60,405	23,560	6,065	...	17,475	1.32
1870-71, ...	17,67,084	17,61,998	15,086	...	...	15,086	0.85
1871-72, ...	1,97,1,603	19,57,885	13,778	5,451	8,325	...	0.70
1872-73, ...	21,75,643	21,72,112	3,531	1,625	43	...	0.15
1873-74, ...	21,77,586	21,75,868	1,718	...	973	745	0.08

The total revenue and civil expenditure for 1804 was revenue, Rs. 2,50,749 ; expenditure, Rs. 1,41,104: for 1850-51 the figures were Rs. 19,27,409 and Rs. 12,01,129 respectively ; for 1860-61, Rs. 24,59,409 and Rs. 13,36,751 ; and for 1870-71, Rs. 38,04,485 and Rs. 15,88,080. In the following detailed list of items for 1860-61 and 1870-71 military expenditure and deposits are excluded :—

Receipts.			Expenditure.		
Heads.	1860-61.	1870-71.	Heads.	1860-61.	1870-71.
	Rs.	Rs.		Rs.	Rs.
Miscellaneous, as police	30,877	36,388	Salaries of all kinds and		
Funds, savings of pay, &c.			contingencies, ...	5,05,831	5,36,469
Land-revenue, ...	17,72,801	21,18,109	Public works, ...	6,67,908	6,68,498
Excise, ...	81,070	1,18,072	Excise, stamps & opium,	23,033	9,186
Stamps, ...	94,022	1,52,346	Post-office, ...	32,236	37,601
Law and justice, ...	25,626	82,932	Telegraph, ...	...	19,165
Income-tax, ...	1,20,293	1,88,100	Local funds, ...	...	4,17,161
Local funds, ...	25,465	4,54,245	Compensation for loss of	1,07,745	...
Canal collections, ...	1,15,184	48,850	property.		
Post-office, ...	99,226	...			
Telegraph, ...	3,699	5,930			
Rent of confiscated lands,	91,226	...			
Total, ...	24,59,439	32,05,022	Total, ...	13,36,751	15,88,080

The actual assessment of the income of the district at six pies in the rupee calculated upon profits exceeding Rs. 500 for the purposes of the income-tax of 1870 during 1870-71 was Rs. 1,88,099. There were 2,372 incomes between Rs. 500 and Rs. 750 per annum ; 1,186 between Rs. 750 and Rs. 1,000 ; 459 between Rs. 1,000 and Rs. 1,500 ; 350 between Rs. 1,500 and Rs. 2,000 ; 522 between Rs. 2,000 and 10,000 ; 17 between Rs. 10,000 and Rs. 1,00,000 ; and one above Rs. 1,00,000 ;—total persons assessed were 4,907.

The following statement shows the collections under each head of the excise for ten years in this district :—

Year.	License fees for vend of spirits.	Duty on spirits.	Opium.	Madak.	Tári.	Intoxicating drugs.	Fines, &c.	Gross charges.	Net receipts.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1862-63, ...	834	12,193	30,922	...	...	2,589	...	2,505	44,037
1863-64, ...	4,734	9,258	32,859	...	3	2,503	...	1,053	48,304
1864-65, ...	7,781	8,814	42,812	...	25	2,743	630	23,755	39,060
1865-66, ...	8,917	9,339	38,194	...	...	2,441	96	27,188	31,691
1866-67, ...	9,084	11,088	39,600	...	23	2,275	13	27,299	34,784
1867-68, ...	14,665	11,818	48,540	16	...	2,737	296	28,298	49,764
1868-69, ...	14,133	8,308	47,744	66	11	3,080	101	28,066	45,377
1869-70, ...	1,293	7,199	48,640	80	29	3,079	59	27,917	32,462
1870-71, ...	6,240	8,095	53,552	1,909	1,460	7,425	9	30,041	48,649
1871-72, ...	12,507	8,834	53,568	2,550	1,838	8,951	43	30,111	58,180

The cantonment accounts are separate and under a separate administration, and are given below :—

Year.	License fees for vend of spirits.	Duty on spirits.	Opium.	Madak.	Tári.	Intoxicating drugs.	Fines.	Gross charges.	Net receipts.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1862-63, ...	1,911	32,687	...	192	5,781	5,716	...	2,670	41,917
1863-64, ...	20,413	21,564	7,514	480	53,364	3,389	4	1,662	51,502
1864-65, ...	32,921	19,263	...	639	2,779	8,609	...	2,425	61,161
1865-66, ...	30,162	20,423	...	662	1,567	5,301	11	3,261	55,498
1866-67, ...	27,456	23,440	...	665	1,853	4,326	55	3,009	53,865
1867-68, ...	20,190	20,837	...	1,057	1,832	6,644	27	1,619	54,938
1868-69, ...	34,666	22,576	...	1,402	1,975	8,121	20	2,864	65,806
1869-70, ...	1,191	19,650	...	1,802	1,528	6,570	25	2,207	27,962
1870-71, ...	19,215	20,790	...	...	...	...	10	3,309	36,506
1871-72, ...	26,520	20,122	...	...	...	...	24	2,927	43,746

In 1855-56 the gross revenue from spirits, drugs and opium from both cantonments and district was Rs. 75,751, which fell to Rs. 65,817 in the following year, rising to Rs. 82,279 in 1861-62. In 1816 Mr. Colin Shakespear writes: "I think that thirty sers per mensem of opium will suffice for the consumption of the district. The opium now smuggled into the district from Begam Sumru's country is much adulterated and sells at Rs. 5 to Rs. 7 per ser." In 1821 the Collector estimated the annual consumption for the district at five maunds only. The average annual consumption in 1871-72 was 85 maunds.

Stamp duties are now collected under the General Stamp Act (XVIII. of 1869) and under the Court Fees Act. The following statement shows the revenue and charges under this head for a series of years :—

Year.	Adhesive stamps and hundis.	Blue-and-black document stamps.	Court-fees.	Duties and penalties valued.	Total receipts.	Gross charges.	Net receipts.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1862-63, ...	9,704	81,266	...	880	91,850	5,192	86,658
1863-64, ...	14,334	95,387	...	1,424	1,11,145	8,109	1,03,036
1864-65, ...	17,492	91,489	...	937	1,09,918	6,209	1,03,709
1865-66, ...	14,979	94,884	...	816	1,10,679	7,418	1,03,261
1866-67, ...	5,687	95,796	...	462	1,02,945	6,695	96,250
1867-68, ...	5,480	1,40,381	...	421	1,46,282	11,741	1,34,541
1868-69, ...	5,499	1,41,933	...	189	1,47,626	9,814	1,37,712
1869-70, ...	5,676	1,73,178	...	395	1,79,249	10,055	1,69,194
1870-71, ...	5,791	29, 03	1,16,853	8,305	1,55,049	11,849	1,43,200
1871-72, ...	5,677	29,422	1,16,865	196	1,52,160	4,691	1,47,469
1872-73, ...	4,386	28,081	1,19,289	209	1,51,963	3,504	1,48,461

The net revenue for 1855-56 was Rs. 55,509 ; for 1857-58 was Rs. 12,779 ; for 1859-60 was Rs. 581,930 ; for 1860-61 was Rs. 1,01,921, and for 1861-62 was Rs. 71,924.

In 1871-72 there were 6,287 documents registered under the provisions of the Registration Act, VIII. of 1871, on which fees to the amount of Rs. 15,668 were collected. The expense of establishment, &c., during the same period amounted to Rs. 6,359. There were 3,750 registrations affecting immoveable property in which the registration was compulsory under Section 17 of Act VIII. of 1871, and 1,165 in which the registration was optional. The other registrations effected refer to moveable property, wills, &c., and the total aggregate values of all the documents registered amounted to Rs. 23,98,172.

The following statement shows the receipts and charges on account of canals
Canal-revenue. for a series of years :—

Year.	GANGES CANAL.				Year.	EASTERN JUMNA CANAL.			
	Collections.	Patwa- ris' fees.	Esta- blish- ment.	Net re- ceipts.		Collections.	Esta- blish- ment.	Patwa- ris' fees.	Net collec- tions.
	Rs.	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	Rs.
1866-67, ...	3,01,806	1,820	1,237	2,98,730	1866-67, ...	58,154	593	152	57,409
1867-68, ...	3,12,210	2,596	1,147	3,03,463	1867-68, ...	1,79,464	685	166	1,78,613
1868-69, ...	3,05,761	3,155	1,391	2,99,214	1868-69, ...	Not given			
1869-70, ...	5,29,071	3,172	1,383	5,24,516	1869-70, ...	2,03,187	660	336	1,99,191
1870-71, ...	3,75,625	14,676	1,973	3,58,976	1870-71, ...	Not given.			
1871-72, ...	3,30,102	11,527	1,265	3,17,310	1871-72, ...	1,55,312	485	4,854	1,49,972
1872-73, ...	3,05,163	15,193	1,553	2,88,617	1872-73, ...	1,85,816	485	8,632	1,76,679

As in Saháranpur so in Meerut, the earliest monument connected with its history is an Asoka column, now on the ridge at Dehli. Shams-i-Siráj relates¹ that this pillar once stood in the vicinity of the town of Meerut and was conveyed to Dehli by Sultan Fíroz, by whom it was re-erected in the Kushak Shikár. He adds that after the erection of the pillar a large town sprung up, and "the Kháns and Máliks of the court built houses there." The Meerut pillar, as noted by the chroniclers, is smaller than the *minára i-zarín* or Saháranpur *lái*. The whole length is about 32·6 feet, and as the end of the shaft is still rough, it seems probable that the polished portion could not have been more than 32 feet in height. General Cunningham makes the upper diameter of the smooth portion 29·5 inches, and the lower diameter 38 inches, giving a diminution in thickness of 0·2 inch per foot. The Kushak Shikár of Fíroz Sháh has been identified with the place where the pieces of the broken pillar were found, corresponding with the above measurements. Padre Tieffenthaler, who resided in India² from 1743, writes of this column :—

¹Dowson's *Elliot*, III., 353 ; Cunningham *Arch. Sur.*, I., 168. ²Bernoulli, I., 129, Berlin, 1791.

“ L’obélisque de Feros, roi des Afgans, qui précéda Tamerlan de 150 ans, étoit de forme cylindrique et posé dans un endroit élevé, sur un pedestal (ou socle) quarré construit d’immenses pierres. On a fait sauter en l’air ce monument avec de la poudre ; il se rompit en plusieurs morceaux dont cinq sont encore existans. Le plus gros de ces fragmens et en même tems celui qui est le plus proche de la base, a $1\frac{1}{4}$ aune Indienne en diametre, et il est long de $2\frac{1}{4}$ aunes. Le second n’est gueres moins épais, mais sa longueur n’est que de $1\frac{1}{4}$ aune. On y remarque des caracteres Indiens, Samcrétans, de Guzarate et quelques peu d’Arabes. L’épaisseur du troisieme fragment est d’une aune ; sa longueur de 2. L’épaisseur et la longueur de quatrieme sont les mêmes que du troisieme. Le cinquieme enfin a moins d’une aune en diametre et n’est long que d’une aune et demie. Les longueurs ou hauteurs de ces différens débris ajoutés ensemble sont 9 aunes ; mais on assure que la hauteur de l’obélisque entier a été de 20 aunes.” This account identifies this broken pillar with one of those erected by Firoz Shah, and as it is clearly not the golden pillar, it must be the one brought from Meerut. The pillar lay in fragments¹ until 1867, when they were again collected together and re-erected on the ridge which runs from the Delhi monument to Hiudu Rao’s house.

The inscription on this pillar, like that on the golden *lai*, for a long time remained undecyphered, until James Prinsep discovered that it was merely a transcript of the same Asoka edict found on the other pillar. The letters are very imperfect, owing to the surface of the stone being much worn and mutilated, but Prinsep pronounced² them so completely duplicates of the other inscription that he did not think it “worth while to make them the subject of a separate note.” The Jesuit padre has some curious disquisitions on the inscriptions on this pillar. Having drawn the forms of some eight of the characters he proceeds to explain their meaning : “Après avoir beaucoup et long tems cherché J’ai trouvé la signification de ces caracteres. Ce sont en partie des signes numériques, en partie des figures d’instrumens de guerre, dont les Indiens se servoient autrefois.” Some he likens to the figures 4, 8 and 6, and others to the emblems of various deities, and winds up with a correction of previous writers : — “De ce que ces caracteres ont de la ressemblance avec des caracteres grecs, quelques Européens ont cru que cet obélisque avoit été élevé par Alexandre le Grand ; mais c’est une erreur : car Alexandre n’a pas pénétré jusque dans ces contrées et on sait d’ailleurs positivement que le monument dont il est question a été taillé et érigé par ordre et aux fraix de Féros, dans l’intention de transmettre sa mémoire et son nom à la postérité.” So whilst avoiding one error the padre falls into another. The existence of this pillar and the discovery of Buddhist

¹The piece containing the inscription was sawn off some time before and sent to the Asiatic Society in Calcutta, by whom it was again returned to Delhi.

²J. A. S., Ben., VI., 794.

remains within the city leaves little room to doubt that Meerut was inhabited in the third century before Christ. No mention however of the place is made by the Chinese Buddhist travellers, and this may possibly point to its decay during the early centuries of the Christian era.

Local tradition shows that in the eleventh century the prevailing tribe to the north was the Tagas. These were driven to the south and east by the Jāts, who entered the district to the north-west and thence spread themselves over the parganahs that they now occupy. To the south were the Meos, and to the south-west were the Dors whose leader, Hardatta, built a fort at Meerut. The Dors were, in turn, expelled by the Gahlots with the aid of the Mina Meos. Rashid-ul-din quoting Al Biruni, a writer of the tenth century,¹ mentions Meerut in his itinerary as ten parasangs from Ahir and ten parasangs from Pānipat. In the romance of the prince of martyrs, Salar Masaid, who is said to have been the first of the Musalmān invaders of India, mention² is made of his capture of Meerut in the first half of the eleventh century. He led his army from Delhi to Meerut. "The princes of Meerut had already heard that no one could hope to stand before Masaid; that in whatsoever direction he or his troops turned they gained the victory. So they were afraid and sent ambassadors with valuable presents to Masaid, acknowledging his supremacy and offering to be the servants of his slaves—in fact submitting entirely to him. Masaid was much pleased, and bestowing the kingdom of Meerut upon them proceeded with all his train to Kanauj." Firishhta says that Mahinad, whilst on his ninth expedition, invaded Meerut (1017 A. D.) and exacted from Hardatta a large sum of money, but regarding this expedition there is such confusion amongst the authorities that it is very difficult to arrive at any distinct conclusion.³ The first undoubted Musalmān invasion is connected with the raid of Kutb-ud-din Aibak, the slave general of Muhammad Sam, in 1191. A.D. Kutb-ud-din marched from Kalram, "and when he arrived at Meerut, which is one of the celebrated forts of the country of Hind, for the strength of its foundations and superstructure, and its ditch which was as broad as the ocean and fathomless, an army joined him, sent by the dependant chiefs of the country." The fort was captured and a kotwal was appointed to take up his station in the fort, and all the idol temples were converted into mosques⁴. A mosque built by the conqueror bears his name to the present day.

The notices of the district in the Persian historians are few and unimportant. In 1255 the fief of Meerut was conferred on Malik Kishli Khan Ulugh Aazzam Barbak-sultani upon his coming from Karra to pay his respects to the

¹ Dowson's Elliot, I., 62.

² *Ibid* II., 519

³ See Dowson's Elliot, II, 458.

⁴ *Ibid*, 219, 297, 300.

Sultán¹. We next read of the troubles caused by the turbulent Meos in the south of the district, and in 1389 A.D. the fort of Meerut was used as a state prison by Muhammad Shah for his rival Abu Bakr, who died there.² The autobiography of Timúr and the *Zafar náma* of Yazdi give a graphic account of the

Capture of Loni by Timúr

Mughal invasion of the Duáb and capture of Meerut in the latter part of 1398 A. D. Marching from Kaithal, Timúr came to Pánipat, and thence by Kánhi-gazin to the Jumna, where he discovered on the opposite side the fort and town of Loni then held by one Maimún on behalf of Sultán Mahmúd.³ He describes Loni as situated "in a duáb between two rivers, the one the Jumna and the other the Halín, the latter being a large canal which was cut from the river Kalini (Jumna) and brought to Firozabad, and there connected with the Jumna by Sultán Firoz Shah." Here he confuses the history of the Western and Eastern Jumna Canals. The garrison appear to have been Hindús attached to the faction of Mallu Khán, the Hindú minister of Mahmúd Sháh. Pasture being scant on the Delhi side of the river, the Mughals crossed the Jumna whilst Maimún made preparations for resistance. Timúr relates that a holy Shaikh came out of the town and represented that he had used his utmost endeavours to induce the people to surrender, but that they had remained obstinate. Timúr accordingly ordered an assault, which was successful. "Many of the Rajpúts placed their wives and children in their houses and burned them; then they rushed to the battle and were killed." Timúr goes on to relate how he gave orders for the safety of all Musalmáns and the indiscriminate slaughter of all the Hindús in the town and fort. Hence he marched along the Jumna and took up his quarters opposite Delhi. This was the scene of the massacre of his prisoners. Timúr relates that his principal officers represented that they had 100,000 prisoners in camp, and that in the event of all the forces being required to attack Delhi, they would find it difficult to prevent assistance being given to the enemy by the prisoners; thereupon Timúr ordered that all the prisoners should be massacred, and so much was this in consonance with the advice of his spiritual counsellors that we read of a holy maulvi, "who had never killed a sparrow in his life," slaying with his own hands fifteen Hindús who had been assigned to him as captives and as his portion of the spoil.

After the capture and sack of Delhi Timúr encamped at Firozabad, and

Sack of Meerut.

thence crossing the Jumna marched for six *kos* to Múdúla, which may be identified with the village of Mandaula in parganah Loni. Then he marched five or six *kos* to the village of Katah or Kanah, indentifiable with the modern village of Katah in the Bágpát parganah. There he received Bahádúr Náhir, Raja of Kutila (Hardwár), and his son Kalnásh (elsewhere called Mubárák Khán), and accepted of their presents and homage, but this availed them little when Timúr attacked their country.

¹*Ibid*, 4.

²Dowson's *Elliot*, IV., 25.

³*Ibid* III., 432, 495; IV., 84.

From Katab Tímúr proceeded six *kos* to Bágpāt, and thence to Asár, which he describes as situated "in a part of the country called duáb." There he heard of the strength and importance of Meerut, then held by Ilyás Afghán and his son Maula Muhammad Thaneswari,¹ assisted by a body of *gabrs* under one Safi. Tímúr first sent a party offering terms to the place if the inhabitants showed due submission and obedience, but the ambassadors returned unsuccessful with the reply "that Tarmsharín Khán, with a host beyond all number and compute, had assailed their fort, but had retired from it baffled." Enraged at this defiant reply, Tímúr started the same day with 10,000 picked horsemen, and halting but one night on the road accomplished the twenty *kos* from Asár and arrived at Meerut on the 29th Rabi-ul-akhir (7th January, 1399). He at once set his men to sap the foundations of the walls, which so dispirited the garrison that the assault was soon ordered. The Mughals with the aid of ladders and ropes mounted the walls and entered the fort. They then spread themselves in the interior and captured the Afghán leaders. Safi, who had fought well, was killed, and the Mughals "put all *gabrs* and people of the place to death.

Tímúr's raid.

Their wives and children were made prisoners and all their property was plundered." The wood used to prop up the mines was then set on fire, and the fortifications of the city and the houses of the people were razed to the ground.² Tímúr's last act was to cause the prisoners to be flayed alive and to order the destruction of the public buildings. From Meerut one wing of the victorious army, under Amír Jahán Sháh, was despatched up the Jumna with orders "to take every fort, town and village he came to, and to put all the infidels of the country to the sword." A second division with the heavy baggage took the route by the Kárasú or Hindan, whilst Tímúr himself proceeded towards the Ganges. The first day he marched to Mansúra, a distance of six *kos*, most probably to be identified with the village of Mansúri beyond Inchauli on the Niloha road. He arrived the next day at Fírozpur, and went thence for fifteen *kos* to Tughlíkpúr. I have identified the latter place with Tughlíkpúr in the Muzaffarnagar district. Fírozpur is described by Tímúr as lying on the banks of the Ganges where there was a ford, for a portion of his troops were able to cross the river close to the main camp. The position of the village of Fírozpur Saifpur to the north of Bahsúma and on the right bank of the Búrhi Ganga both in name and position corresponds

¹Thornton notes that Ritter and others suppose the *gabrs* mentioned here were magi or fire-worshippers; "but *gabr* in Persian means any infidel, and the assemblage of *gabrs* at Hardwár, their worship of a rock hewn into the shape of a cow, their suicide by means of fire and their hrowing the ashes of the dead into the Ganges would indicate their Hindú origin and Brahmanical faith." Amongst the 'others' may be mentioned Sir H. M. Elliot (Beames' Elliot I, 119; Dowson's Elliot, V, 559; IV, 506), who identifies these *gabrs* of Meerut with colonies of fire-worshippers established in Upper India."

²Dowson's Elliot, III, 451, 506; V, 485.

with the Firozpur of Timúr. This, if admitted, will go to show that the recession of the Ganges from its old bed has taken place since 1400 A.D. The onward course of the Mughal army is noticed, under the districts of Muzaffarnagar and Saháranpur¹.

After the departure of Timúr Meerut became the head-quarters (March, 1399) of Sultán Násir-ud-dín Nusrat Sháh, who was joined here by a small force under Adil Khán. The Sultán took possession of the camp-equipage of Adil Khán and proceeded to Dehli. In all districts visited by the Mughals there was great pestilence and famine after their departure². In 1512 A.D., during the reign of Sher Sháh, whilst that Sultán was engaged in the siege of Kalinjar, one Alam Khán Míána created a disturbance in the dnáb, and having raised the province of Meerut, he devastated the greater part of the neighbouring country.³ Alam Khán was slain by Bhagwant, the slave of Khawás Khán, governor of Sirhind, whither he had gone with his Meerut levies on a plundering expedition. Shortly before the accession of Bahlol Lodi, the entire country from Sambhal "to the ferry of Khwaja Khizr, which adjoins Dehli," was held by Darya Khán Lodi, and Niamat-ulla mentions the parganah of Loni as his western boundary. Lying near the imperial residence, Meerut was a favourite place of resort for the nobles of the court, who frequently enjoyed the pleasures of the chase in the Jumna *khádir*. In the reign of Akbar the present parganah of Meerut became the head of a dastúr in the sirkár and súbah of Dehli. Numerous pleasure gardens and hunting preserves were established by the successors of Akbar in parganah Loni, and to water the grounds of one of these, known as Ránap, the Eastern Jumna canal was first designed. The general history of the upper dnáb includes the history of this district and has been given in the introduction. In 1778 Walter Reinhard, *alias* Sumru, settled at Sardhana, and in 1781 occurred one of the most destructive of the Sikh invasions. Mirza Shafi Khan was sent to expel them and after several ineffectual skirmishes brought them to a general action on the 15th August under the walls of Meerut. He attacked the Sikhs with great énérgy and resolution, and the imperial troops, remembering their disgrace of the previous year in the Panjáb, exerted themselves to make amends for their former defeat. Success crowned their efforts, and Sáhib Singh with other commanders of note and five thousand men fell on the spot. The Sikhs retired across the Jumna, and the people were relieved from the presence of a cruel and implacable enemy, who had ravaged their country for several months.⁴ In 1783, Zain-ul-abdín, the brother of Mirza Shafi, was governor of Meerut, and when the Mirza was assassinated, the emperor became desirous of removing him from office and directed his appearance

¹ There is a second Firozpur to the north in parganah Bhúma Sambhalhera of the Muzaffarnagar District which some think is the village intended by Timúr. Dowson's *Elliot*, IV, 26.

² *Ibid.*, 407.

³ Francklin's Sháh Alam, 94, 114.

at court. At first Zain-ul-abdîn refused to obey and prepared for resistance. Afrâsyâb Khân was sent to compel his obedience and invested Meerut, when negotiations were opened which led to the unconditional surrender of the town.

It was to Meerut that Ghulâm Kâdir retreated when pursued by the Marhattas after his outrage on Shâh Alam. Râna Khân with Ali Bahâdur, another Marhatta leader, invested the town, which was garrisoned by a strong force of Rohillas who had remained faithful to their leader. Râna Khân, not having any heavy artillery, was prevented from forming a regular siege; he, therefore, drew a line of circumvallation around and blockaded the fort and thus cut off the supplies, so that the garrison began to suffer and to grumble. Ghulâm Kâdir endeavoured by repeated sallies to animate his troops and drive away the besiegers, but finding all his efforts fruitless, and the garrison having become mutinous, he determined to escape. Attended by 500 horse, who were still attached to him, he, at their head, rushed out of the fort and charged the enemy so vigorously that though every effort was made to take him prisoner, he escaped with a large portion of his followers. But, at length, even these deserted him, so that, in a short time, he was left alone, and to complete his misfortunes, he fell into a well-run, and in his fall suffered a contusion which, for a time, rendered him insensible; there he was discovered by a peasant and delivered up to the Marhattas. His subsequent punishment at their hands has been related elsewhere.¹ From this time until the British occupation the district remained in the hands of the Marhattas. Up to 1818 A.D. it was styled the southern division of Sahâranpur, and in that year was made a separate charge. The history of the changes that have occurred in its constitution has already been given, and until the mutiny there is nothing worth recording here, for the events that occurred related principally to the civil and fiscal administration, and are given under their proper heads. I shall now turn to the story of the mutiny and give it from the official records of the time.

All accounts of the mutiny² agree as to one fact, that in the early part of 1857 there were disquieting rumours afloat in the bazars and amongst the native troops, especially those regarding the use of polluting grease in the preparation of the new cartridges about to be issued to the troops, and the mixture of ground bones in the flour sold in the bazars, by which it was said that Government intended to destroy the religion of

¹ Francklin's Shâh Alam, 183. The peasant's name was Bhisra Rân; he received the village of Timakiya in this district, and Imlahra and Oghipur in the Aligarh district, still held free of revenue by his descendants.

²From the official report of Mr. Fleetwood Williams, C.S., and Major Williams, the former Commissioner of the Division, and the latter Commissioner of Military Police. I have confined myself to these local accounts, leaving the general history of the revolt to be gathered from Sir J. Kaye's work and the numerous narratives that have been published at various times.

the people. Early in April a *fakir* riding on an elephant and attended by a few horsemen and a number of native carriages came into the city and was visited by several of the native troops. He was ordered to leave the station, but is said to have been for some time concealed in the lines of the 20th N. I. After some consideration it was resolved to test the spirit of the men by ordering the troopers of the 3rd Bengal Cavalry to use the new cartridges. A trooper by name Brijmohan announced to his comrades that he had used them, and that all would have to do so. The result was that Brijmohan's house was set on fire on the 13th of April, and from this date incendiary fires became frequent. The 23rd of April was fixed for a parade of the 3rd Cavalry, and on the preceding day the troopers, both Hindú and Musalmán, bound themselves by an oath not to use the cartridges when called out for exercise. The skirmishers of the regiment refused to take even the cartridges that they had been accustomed to use for years. These men were arrested and tried by court-martial, and on the 9th of May eighty of them were condemned to ten years' imprisonment and five men to five years. The prisoners were at once deprived of their arms and uniform and lodged in the new jail near the Suraj Kund under a guard of the 20th N. I. It is said that their comrades first thought of trying the effect of an appeal to the legal authorities, and subsequently of a petition to Government, but, whether this be true or not, they resolved about noon on Sunday, the 10th May, to have recourse to arms. Between 5 and 6 p. m. the cry that the Europeans were coming to take possession of the magazines of the Native Infantry spread through the sudder bazar and the lines of the 20th Native Infantry. The men of the 20th at once took to their arms and the mutiny commenced. Colonel Finnis of the 11th, who had approached to pacify them, was cut down; the next victims were Captain Macdonald of the 20th, who tried to control them, and Mr Tregear of the Educational Department, who had unfortunately gone to the lines. The remaining officers of both regiments were shot at and driven from their parade-grounds, or were urged by their men to leave. The bad characters of the city and bazar were assembled before a shot had been fired, and armed with clubs, spears and swords and any other weapon that they could lay hands upon, collected in crowds in every lane and alley and at every outlet of the bazars, whilst the residents of the wretched hamlets which had been allowed to spring up all around the bazar and between it and the city were to be seen similarly armed pouring out to share in the plunder which they knew would soon commence.

All Christians and the European soldiers then in the bazar were at once savagely attacked by crowds headed, in many instances, by the police and cantonment peons in uniform. The officers who first hurried to report what was going on passed with difficulty through the crowds, and those who came later were attacked and murdered.

Meantime a large party of the 3rd Cavalry rushed to the jail and released their comrades without the slightest opposition from the jail guard or the guard of the 20th N. I. None of the other convicts were released by the troopers, nor were the persons or property of the European jailor and his family molested. The prisoners, to the number of 839, were let out by a mob of villagers, who, emboldened by impunity, attacked, broke upon and set fire to the jail about midnight. The inmates of the old jail (720) were released about an hour after the outbreak by a small band of sepoys, who were thus permitted unmolested to let loose upon the station a number of the worst and vilest characters to commit havoc and destruction, and who, in all probability, were the chief perpetrators of the atrocities committed on helpless women and innocent children, for the bodies found in the neighbourhood of the old jail were the most mutilated, and by sword cuts, whereas those by the parade-grounds were evidently shot and lay as they fell. In tracing the route taken by one unfortunate lady who, with her children, fled in disguise towards the city, Major Williams felt convinced that, as she emerged from the narrow lanes of the Husaini bazar on to the highroad, she must have fallen in with a band of these wretches and by them have been murdered. Then came the cries of "Ali, Ali," "Din, din, Ya Illah," from small bands of Musahmán troopers and sepoys, who rushed through the city arousing the butchers and others to a religious war. The Judge's court and the tahsildár's office were at once burned down. Mixed crowds of soldiers, sepoys, policemen, hangers-on about the bazars, servants and convicts burned and plundered the cantonments, murdering every Christian that they could lay hands on. Owing to the distance of the civil station from cantonments nothing was known concerning the outbreak until close upon 7 P. M., when the people going to church saw the blaze of burning bungalows to the west. The guards of the different mutinous regiments posted in the civil lines seemed to have as little knowledge of the impending catastrophe, for it was not until they saw the destruction of the residences of their officers and heard the shots fired from cantonments that they marched off to join their regiments. The guards at the treasury and the offices of the Paymaster and Cantonment Magistrate remained steady until relieved, and even a troop of the 3rd Cavalry, under Captains Craigie and Melville Clarke, assisted in restoring a semblance of order and in escorting Europeans to the dragoon lines. Nothing was done by the military authorities to stem the onward march of the plunderers, and the isolated efforts of a few officers who were left unsupported were of little avail against the myriads of ruffians, whose thirst for rapine and blood made them such formidable antagonists. This irresolution nearly cost us our Indian Empire, and is one of the saddest memories of the great struggle. There cannot be any doubt that had one tittle of the energy that was displayed elsewhere been shown in Meerut on the evening of the 10th of May,

the mutiny could never have occurred, or, at least, would have been indefinitely delayed.

The mutineers made no stay in the station, but fled in various directions. Some after holding a short and hurried consultation turned towards Dehli, and others in the opposite direction, but all as disorganized mobs with no acknowledged leader. Some of them threw away their arms and property as they fled, fearing the pursuit that was never attempted, and others abandoned their horses, which were caught towards Galáothi on the Bulandshahr road and were brought in. Many small bodies took to indiscriminate plunder as they went along, and were joined by the ruffians of the bazars and city and the numerous camp-followers, and forming themselves into gangs, robbed travellers on the high road of all that they possessed. The remainder spread fire and destruction nearly up to the treasury, where they were stopped by the guard of the 60th Rifles. About 10 p. m. the Gújars of the neighbouring villages crowded in thousands to attack those parts of the station which had hitherto been spared. They set fire to the lines of the Sappers and Miners; a fine barrack for Europeans and the native huts were destroyed, and the sergeants' bungalow. The only occupants of the bungalow were a conductor and his family. The father and some of the children were cut to pieces, and the mother and the remainder of the children, dreadfully wounded, escaped to the artillery hospital, where one of the children soon after died. Mr. Parker of the canal office defended his house until relieved by the Rifles. Other houses were saved by the servants and the police cavalry. The Gújars attempted to burn the artillery lines, but were driven off by the pickets. The new jail and all the private houses were completely gutted of their contents, and whatever could not be carried away was smashed into fragments. The house of the Commissioner was attacked, and Sayyid Mir Khán Paghmání, who joined the Commissioner, had his horse shot under him and was wounded in the thigh whilst trying to restrain the mob. The Commissioner, with his wife and another lady, retired to the roof of the house, and the servants said that they had gone to church. "Though drawn swords were put to his throat, the jamadár, Guláb Khán, persisted in this statement, and the other servants were faithfully silent regarding their master's presence. The house was fired: the flames spread, and longer continuance on the roof became impossible; suffocated with smoke, with feet scorched by the heat of the roof, the party was about to descend, when, for a short time, the whole body of murderers went to hunt for Europeans in other places. The servants seized the moment to plant a ladder against the roof at the back of the house, got the party down, took them to the garden, and then concealed and guarded them all night." Two sepoys of the 11th N. I. carefully escorted some ladies to the dragoon lines, a city Musalmán saved two Christian families. A female servant and a washerman were trying to save

a lady and her children disguised in native clothes, when a ruffian drew aside the veil, and seeing the pale face, cut the poor mother to pieces. If the fact be realised that on many minds the fearful conclusion pressed that if less than 2,500 native troops dared such an outbreak in the face of an equal number of European soldiers, a fearful trial awaited every Christian in the length and breadth of Hindustán. Some idea will be formed of the horror felt by every one on the night of Sunday the 10th May, 1857, a day ever to be remembered in the annals of India. A telegram was sent to Agra, but the wires were cut before the message was completed, and expresses were then sent to Muzaffarnagar, Dehli, and Bulandshahr.

At daybreak on the morning of the 11th a force was sent out to reconnoitre.

The 11th of May. Mr. Williams writes :—" It is a marvellous thing that

with the dreadful proofs of the night's work in every direction, though groups of savages were actually seen gloating over the awful mangled and mutilated remains of their victims, that column did not take immediate vengeance on the sudder bazar and its environs, crowded as the whole place was with wretches, hardly concealing their fiendish satisfaction, and where there were probably few houses from which plundered property might not have been recovered. But the men were restrained, the bodies were collected and placed in the theatre, in which a dramatic tragedy would have been that night enacted but for the real and awful one which occurred the night before. The corpses were found grossly mutilated and in a state which showed that they had been exposed to the most wanton insults. Such matters could not be made the subject of judicial enquiry and proved by depositions on oath without reference to names, and putting on record individual instances which in mercy to the feelings of relatives should be buried in oblivion. But the fact that the most atrocious indignities had been inflicted after death is as fully proved as anything in this world can be by credible European eye-witnesses, whose accounts have been elicited and confirmed by repeated enquiries through different channels. Generally the ruffians seem to have been too intent upon the destruction of Christians, too eager to kill, to think of any other atrocities till life was extinct, but in one case there is no doubt of the infliction and repetition of the deepest dishonour, and acknowledgment was publicly made that this was attempted in another case on a Christian female, though these were exceptional cases."

The European guards were removed within their lines on the 11th and a

The district, line of sentries was posted around the European cantonments. Those whose homes had been destroyed

were accommodated in the Dumduma, or artillery school of instruction, and the treasure was also removed there. In the meantime the Gújars and bad characters commenced the same system of plunder throughout the district that had

been so successfully inaugurated in the city. Ramdayál, a prisoner confined in the civil jail for debt, was released on the night of the 10th, and hastening to his village of Bhojpur, in the Murádnagar tahsíl, collected a party and murdered the money-lender who had the decree against him. On the 11th and 12th the tahsíl of Sardhana was attacked by Rángars and Rajpúts, who were beaten off from the tahsíl, but they succeeded in plundering the bazar. Kalandar Khán, a havildár of Nirpura in parganah Barnáwa, set himself up as Raja of those parts. A party of fugitives from Dchli came in on the 12th with the news of the mutiny there, but out of a second party which included Lieutenant Willoughby, by whose orders the Dehli magazine was blown up, only one (Captain Osborn, 54th N.I.) escaped; all the rest were murdered by the villagers of Kumhera on the Hindan river, in the Murádnagar tahsíl. On the 13th the officers of the Hápur stud depôt came in, and on the 14th martial law was proclaimed by General Hewitt commanding the station, and Mr Greathed, the Commissioner, and some show of energy was made in the capture and execution of the murderer of the wife of Captain Chambers, 11th N. I. The news of the mutiny and massacre at Dehli greatly contributed to still further depress the inhabitants of Meerut, and the rumour of an impending attack by the reinforced mutineers increased the general despondence, and seems to have completely paralysed the authorities and prevented any attempt at making use of the considerable force still at their command.

On the 15th a telegram was received appointing Mr. Fleetwood Williams Commissioner of Dehli, and directing him to proceed with a strong escort to Dehli. He applied for aid to the military, but was refused any assistance. The same day six companies of the Sappers and Miners arrived from Rúrki, and on the next day a portion of them broke into mutiny, and shooting their officer, Major Fraser, fled into the country. Troops were sent after the mutineers and succeeded in cutting up some forty or fifty of them amongst the sandhills beyond the cantonments. On the 19th May Mr. Williams was directed to proceed to Bareilly, but was prevented by the news of an outbreak at Moradabad itself and the refusal of the authorities at Meerut to grant an escort. On the 21st May the ladies came in from Bulandshahr, and the Gurkhas of Dehra passing down the canal punished some of the plunderers in the interior of the district. After a fortnight of inaction, a small party of the carabineers was allowed to make an expedition against the village of Ikhtiyárpur, which had become notorious for the plunder of travellers and for other acts of rebellion. Mr. Johnston, the Magistrate, died from the effects of a fall from his horse and was succeeded by Mr. Turnbull on the 26th May. On the following day, the Dehli force under Brigadier Wilson marched out of Meerut and fought the actions on the Hindan on the 30th and 31st May, in which the rebels were completely defeated. In the meantime Sáh Mal, a Mawai Jat of Bijraul in parganah Baraut, commenced his

career by seizing five hundred head of laden cattle travelling with merchandise, and proceeded to collect escaped convicts and the worst of his own brotherhood to form a gang for more daring exploits. The Gújars also were getting bolder daily. About 125 men of the 11th N. I. who remained faithful were employed on police and patrol duty in the interior of the district and did excellent service whilst the disturbances lasted, but many of the new levies deserted or fled at the slightest opposition. On the 3rd June intelligence of the outbreak at Bareilly arrived, and the Moradabad fugitives, comprising Messrs. Wilson, Saunders, J. S. Campbell, Dr. Cannon, and their wives, reached the boat bridge at Garhmuktesar, but owing to the covert disloyalty of their escort and the opposition of the people of the town, they were not able to destroy the bridge, and could only give orders that all the boats should be drawn up on high land. The same day the villages of Gaganl, Sisari and Murádnagar to the south of Meerut were burned for stopping the communications along the Agra road, but owing to the treachery of Bishan Singh, kotwál, a native of Rewari, the inhabitants escaped.

On the 12th of June, Mr. Dunlop, the Magistrate, who had been away on leave to the snows, returned and resumed charge of the district. On the 18th a small party of rifles, cavalry and artillery who had been obliged to fall back upon Bábugarh from Bulandshahr again advanced on Galáothi and defeated the force of Walidád Khán of Málágarh. Mr. Wilson also visited Garhmuktesar and found that the orders of Mr. Willams regarding the bridge-of-boats had been obeyed. In the meantime the rebel troops from Bareilly were approaching the Ganges on their way to Delhi, and not finding boats at Garhmuktesar were obliged to collect them from the other gháts and private ferries where they had been concealed by those interested in keeping up the disturbances. The brigade consisted of a light field battery, a regiment of cavalry and four regiments of infantry, besides a large following of all sorts, and commenced slowly to effect a passage. Opinions at Meerut as to the proper course to be pursued in dealing with this bridge were divided. One party was for opposing the passage at Garhmuktesar, which might unquestionably have been successfully done by a force which could have well been spared from the station. But this would only have caused a delay of a few days, for the brigade could have moved down and crossed below, where no force from Meerut could have dared to go and meet them. Another was for allowing the mutineers to cross and attacking them midway between the Ganges and Delhi. For this the force at Meerut was not sufficient. Not more than five hundred really effective European soldiers could be detached from Meerut, but it was hoped that advantage might be taken of the straggling line of march of the mutineers, encumbered as they were with about seven hundred carts laden with plunder and women, by a flank attack. Timely

and earnest requisitions were made to the head-quarters camp before Delhi to reinforce the Europeans of Meerut with a detachment of five hundred men from the force encamped at Rái opposite Bágpát, who could easily have reached Meerut in two marches. The position before Dehli, which was never forced even when the number of rebels in Dehli had been trebled, had been seized. Mutineers discouraged by defeat had been driven into the city, and the head-quarters camp was quite strong enough to hold its own for a few days, even without the reinforcement referred to, as the actions on the Hindan and at Badli-ke-Sarái had fully proved. The requisition, however, was negatived, and peremptory orders were sent to the officer commanding at Meerut prohibiting any offensive measures, and directing him to confine himself entirely to the defensive. The effect of this order on Meerut and the surrounding districts was disastrous. The Bareilly brigade passed through the district, burning and plundering all Government property. The stud buildings at Bábugarh were destroyed. Open rebellion showed itself on all sides. Walidád of Málágarh became master of the Bulandshahr district, Aligarh was evacuated, and Kadam Singh set up for himself as Raja of Parichhatgarh and Mawána, and unearthing five guns which had been buried since the conquest in 1803, called his Gújar clansmen to arms. This hesitating policy encouraged the turbulent and confirmed the wavering to the side of disorder, so that at no time since the outbreak had the district officers so many difficulties to contend with.

The villagers on all sides up to within a few miles of cantonments had become so bold that the necessity for some active measures for their coercion and the restoration of some semblance of authority and order became palpable to all. Major Williams and Mr. Dunlop resolved to collect together a volunteer force, subsequently known from their earth-coloured uniforms as the Kháki Risálah, and for this purpose called upon all unemployed Europeans for their services, and the call was nobly responded to. In a short time the force comprised forty-five mounted Europeans and eleven faithful troopers, thirty-eight footmen with two 3-pounder mountain train guns and a 12-pounder howitzer worked by two sergeants and some native artillerymen. The first expedition of this corps (4th of July) was in company with a small force of regulars against a number of Gújar villages about six miles from Meerut, of which the chief were Panchli Ghát and Nagla. The inhabitants of these villages, besides bearing a conspicuous part in the sack of the station and the murder of the Europeans on the night of the 10th of May, had since made themselves notorious by the number and heinousness of their crimes. The principal villages were successfully surrounded, a little after daybreak, by different parties told off for the purpose. A considerable number of the men were killed in the attack, and of forty-six prisoners taken, forty were subsequently brought to trial and suffered the extreme penalty of the

law for their misdeeds. The villages were burned. It was time that something were done to restore order, for not more than a few thousand rupees of revenue had hitherto been collected, though the instalments had long been overdue. There were only Rs. 70,000 in the treasury, which would have been expended in a few days, and except with a strong force not a Government officer could move five miles from Meerut. On the 6th July intelligence was received of the defeat of the rebel force under Walidad Khán by the Jâts of the village of Barthona, who took three of his guns and wounded and killed several of his men. These gallant Jâts stood out for themselves and for Government throughout the rebellion, and thenceforth particular care was taken to support them and render them assistance when seriously threatened. One effect of these proceedings was that Kadam Singh, the *pseudo*-Raja of Parichhatgarh, retreated to the Gújar stronghold of Bahsuma, and his men dispersed, and petitions kept pouring in from different quarters in which the writers tried to prove their loyalty, or to excuse themselves from showing any active support of the ruling power. Sáh Mal of Bijraul now attacked and plundered Bágpát and destroyed the bridge-of-boats, the only remaining means of communication with the head-quarters camp before Dehli.

Brigadier Jones of the Carabineers superseded General Hewitt in command of the station, but the order against employing the troops in offensive operations remained in force. The civil authorities again despatched the volunteers to relieve Begamabad, which was reported to be threatened by the Gújars of Sikri. Before the relief arrived Begamabad had been plundered, but the volunteers determined to attack the rebels in their homes. Sikri was surrounded, and in the outskirts upwards of thirty men were killed, whilst the remainder fled to a large native house with a walled enclosure and offered a determined resistance. The house was gallantly stormed and captured by the dismounted cavalry; and after a severe hand-to-hand encounter within the enclosure, the rebels were disposed of and the village was burned. Still affairs to the west remained in a very unsettled condition: many of the inhabitants of the south-western and western parganahs transferred their allegiance to the king of Dehli, and in Dhaulana they expelled the police and destroyed the Government offices. Supplies were constantly collected and sent to the rebel camp from Baraut, and though earnest representations were made as to the necessity of keeping up and commanding the communications with Dehli through Bágpát, nothing was done. One petition was, however, favourably received, and that was that the General might use his discretion in detaching portions of the troops for service in the interior. The first use made of this permission was to send forty men of the Rifles with the volunteers to boat up the quarters of Sáh Mal. On the 16th of July the force arrived at the Hindan and heard that the Ját was about to attack the loyal

village of Deola, which had assisted the fugitives from Dehli. The ford over the Hindan was barely practicable, and after having it marked the force crossed and pushed on to Deola, where they arrived early on the morning of the 17th, to find that the enemy had fled during the night, leaving their cooking utensils behind them in their haste. The people of Dasodh were punished for their complicity with Sáh Mal, and immense quantities of grain that had been stored for conveyance to the rebel camp at Dehli were destroyed. As the force were leaving the village, Dr. Cannon, with one native horseman, was attacked by a large party of rebels, but they dearly paid for their rashness, for the cavalry portion of the force came upon them while held in check by these two gallant men and soon put them all to flight with great loss.

The attacking force, Europeans and natives, only numbered 149 men, and not satisfied with the success that they had met with resolved to pursue Sáh Mal and his army. Mr. Williams writes:—"On the 18th of July, at daybreak, the force marched along the left bank of the Eastern Jumna Canal

Defeat and death of Sáh Mal. for the town of Baraut, a distance of about fourteen miles. The Magistrate and Collector, Mr. Dun-

lop, with rather rash zeal, diverged from the line to visit villages with the view of collecting revenue, but soon found a host coming against him, and had to fight for his life like a man and rejoin the force. The whole country was rising; native drums, the signal to the villagers to assemble, were being beaten in all directions, and crowds were seen moving up to the gathering place ahead. On reaching Baraut the advance guard was attacked; the mounted volunteers drove back the insurgents, killing upwards of thirty of them in the skirmish. An advance was then made on the force by a large body commanded by Sáh Mal himself, who took up a position in an extensive orchard of large trees with a tank in front. The Rifles advancing beautifully drove them out of that, killing many, into the fields of Indian-corn behind, and the mounted volunteers on each flank swept round the orchard, and on the enemy breaking into the fields charged them. Those on one flank coming on a party of mounted men went at them, and after a hand-to-hand fight, in which many of the rebels were killed, it was found that Sáh Mal himself was one of the slain, having been killed by Mr. A. Tonnochy, aided by two of the native troopers. The little force had hardly collected together again when a third attack from a fresh quarter was made by the rebels, but feebly sustained. The news of the death of Sáh Mal having spread, a few rounds from the mountain train guns, and another advance of the Rifles and mounted volunteers, sufficed to disperse this body; and this gallant little band remained masters of the fields, having beaten off at least 3,500 men with considerable slaughter of the rebels, the loss on our side being only one killed and a few wounded; among the latter was Mr. Tonnochy, who had a narrow escape, having a spear thrust at him while engaged with Sáh Mal.

One of the volunteers, Mr. Lyall, C.S., had a valuable horse killed under him in a personal combat with one of the insurgents. Though Sergeants Anderson and Readie did all good soldiers could do, the mountain train guns, save in the third attack, were of no use. Dr. Cannon had actually to seize and press some of the enemy to carry the ammunition. The success, indeed the safety of the whole party, must be ascribed to the men of that noble corps, H. M.'s. 60th Rifles, under Lieutenant Mortimer, particularly, and to the mounted volunteers. Some of the Najibs, *i.e.*, the Magistrate's trained guard, behaved very well; the rest of the infantry were hardly equal to guarding the baggage. But the simple fact that 149 men entirely defeated at least 3,500, after fighting for more than three hours, speaks for itself; all must have behaved nobly. The force encamped that night on the right bank of the canal at Baraut; and the head of Sáh Mal was exhibited, so that none might doubt his death."

"Next day intelligence of an intended attack by a more formidable body of insurgents was received, and a requisition was sent to Meerut for support. On the arrival of the reinforcement both detachments marched to Sardhana on the 20th and halted there. On the following day the village of Garhi, which had been concerned in the attack on the Sardhana tahsili and the plunder of the bazar on the 11th of May, was visited and the inhabitants were punished, and the force returned to Meerut on the 23rd of May. The effects of this wholesome activity were soon visible all over the district in the collection of the revenue. In this work Mr. J. Cracroft Wilson, the Judge of Morabad, gave most valuable assistance with about 25 of the men of the 8th Irregular Cavalry, who had come over with the civil officers from Moradabad and remained staunch. This most energetic officer, without another European, with only natives whom few would have trusted, went out day after day, having two sets of horses that the animals might get rest, in every direction, collecting revenue, suppressing anarchy, and (having been made a Special Commissioner with powers for the purpose) punishing rebels and plunderers. Over a flooded country, under a burning sun or through rain, Mr. Wilson would make his nearly daily march of about 30 miles, including going and returning, besides occasional chivies after conscience-struck scoundrels, who fled on seeing him. On one occasion, between early morning and dark, he with his men made a march of 26 miles out and back, in all 52 miles, having sent on a change of horses, with merely the grooms, to a notorious village, two of the headmen and two inhabitants of which he had been obliged to hang for a most atrocious case of highway robbery and murder, among other heinous crimes, a place where in June it would have been rash to have sent the horses with their riders. But in the neighbourhood of Dehli and towards Málágarh rebellion was spreading, being encouraged by constant detachments of mutineers from those places."

On the 27th July intelligence was received of an intended attack by Walidád on the Ját village of Barthona, and it was determined, *Action near Galáothi.* at all hazards, to support the Játs and drive the rebels back. A small force was despatched to Hápur, and on the 28th it was ascertained that Walidád Khán had posted 400 cavalry and 600 infantry, with about 1,000 insurgent Gújars and Rajpúts, at Galáothi on the Agra road. An immediate attack on his position was decided on; a small detachment was left to guard the baggage, and the remainder marched for Galáothi at 2 A. M. on the 29th July. On the way information was received that a picket of the rebels was posted at a bridge about four miles on the Hápur side of Galáothi, and a surprise was arranged for and admirably carried out by Capain Wardlaw and a party of the carabincers. The rebel picket consisted of sixty cavalry, and of these forty were killed in the attack. The whole force then advanced on the village, the rifles cleared the enemy out of the high crops on each side of the road in which they had concealed themselves, and the cavalry and guns marched along the road. About one mile from the village a body of the enemy's horse appeared on the road, but a few rounds from the guns sent them flying, and on arriving, the village was found to have been evacuated. The cavalry was sent in pursuit, but with directions not to approach Málágarh; these instructions were issued in obedience to the orders of the military authorities then at Lahore. The restrictions perpetually imposed on the local authorities were much to be regretted, as owing to the defeat of his men Walidád was then left almost alone, and an attack on the fort would most probably have had a successful issue. Two singular guns made of the iron screw sockets of the telegraph posts and mounted on rude carriages were captured at Galáothi. The ammunition consisted of pieces of telegraph wire put up in bags with the powder, and a supply of powder in barrels and coils of telegraph wire as reserves were also discovered.

On the 30th of July a party of rebels from Ghúziabad attacked and occupied the Murádnagar tahsili and carried off the officials as prisoners to Dehli, so that it became necessary to remove the head-quarters to Mahiuddínpur, about eight miles from Meerut. Officials appointed by the rebels spread over the Murádnagar, Dásna and Dhaulána country, but still the tahsildár contrived to get in some of the revenue. In the Hápur tahsil, the neighbourhood of Walidád Khán's force at Málágarh severely checked the restoration of order, and on one occasion it was only with the assistance of the generally disloyal Gújars that the tahsildár was able to bring in his collections in safety from Datiyána. The Murádnagar rebels pushed up as far as Dhaulari and carried away prisoners the entire police force stationed there. About this time Sajja Mal, the grandson of Sál Mal, returned from Dehli and again commenced to raise a disturbance in Baraut. On the 23rd of July a party sent to bring in the revenue was attacked: some

Western parganahs still
in the hands of the rebels.

were killed and wounded, whilst in one case the villagers said their revenue was ready, but Government should come and take it if they wanted it. Again the Kháki Risálah were obliged to take the field against the villagers of Panchli Buzurg, Nagla and Bhupra, who met with a well-deserved punishment.

By the middle of August the whole of the district except Baraut on the west, Mitránagar on the south-west, and the Hápur boundary on the south, was again, for a short time, well under control; but Walidád, having been strengthened by the Jhánsi Brigade, attempted, with their aid, to raise a

Walidád threatens Meerut. levy *en masse*, and gave out his intention of attacking both Hápur and Meerut itself. This was a serious state of affairs, and to add to the difficulty the muharram was then going on, and a requisition came from Dehli for two hundred more men of the 60th Rifles and all the artillery recruits and officers. This last demand reduced the available force in Meerut to one-sixth of the force, which in May, when there really were no enemies who might not have been suppressed by a little energy, was considered barely sufficient to defend the station. "No objection could, of course, have been made to increasing at any sacrifice the army at Dehli for the assault, but it was known that the assault would not take place for, at least, a fortnight, and the detachment from Meerut, which could reach Dehli in three days by Bágpát, was ordered first to march by Saháranpur and Karnál. Notwithstanding earnest remonstrances and solicitations that instead of these valuable soldiers being exposed to a long tedious march up the country, and down again when they were not wanted, they might be kept to drive back the enemies that were threatening Meerut, and notwithstanding the fullest assurances that they should be sent by the direct road and be at Dehli before they could possibly reach by the long route selected, they were taken away. Under these circumstances, after due consideration, it was happily decided that the only way to meet the crisis was to face it manfully by taking the offensive instead of waiting to be surrounded. It was assumed, and as events proved perfectly justly, that nothing was so likely to deter the seditious from any attempt as the movement of a compact little column, and that the appearance of one at Hápur would check Walidád's advance, and thereby all the probable consequences of it." Accordingly a force of 300 Europeans were despatched towards Hápur on the morning of the 27th August, the last and greatest day of the muharram. The first halting-place was selected with a view of allowing the troops to remain near enough to Meerut to hear any firing, should any disturbances occur there, and at the same time to frighten Walidád by the advance of our troops. In the spirit of the instructions already issued, the column had orders not to go near Málágarh, nor to advance beyond Hápur, unless attacked or pursuing. It therefore took up a position near Hápur, and Mr. Wilson took advantage of the

presence of the troops to collect the revenue. The landholders of Pilkhuwa sent in to say their revenue was ready, and that they were ready to bring it in, but begged that two messengers should be sent to accompany them. Two men were sent, but as soon as they entered the village they were murdered by these very people of Pilkhuwa. A portion of the column visited this village with exemplary punishment.

On the afternoon of the 10th of September intelligence was received at Hápúr that the Málágarh rebels were advancing. Major Sawyer took a portion of the mounted force with two horse artillery guns to reconnoitre, and drove in an outlying picket of the enemy on the road towards Galáothi; follow-

Second action near Galáothi. ing up at a gallop they arrived to within 250 yards

of the main body of the rebels, who opened on them a smart fire, which continued for some twenty minutes. Fortunately the dashing approach of the reconnoitring party disturbed the range of the enemy, and their four 9-pounder guns were soon silenced by the two 6-pounder guns of the horse artillery. Though the carabineers were drawn up on one side of the road, with the volunteers on the other, and the guns on the portion of the road in the middle, and shot and shell fell thickly round the small party, the only damage received by them was a spoke of the wheel of one of the limbers smashed. "The last few rounds were fired after dusk, and as the main body of the enemy was above 1,000 strong, it was not considered prudent to advance upon them with only 100 cavalry and two guns, and the reconnoitring party returned to camp. It was subsequently ascertained that the rebels really had fled boldly, leaving all their guns, one with the carriage smashed to pieces, on the road the whole night; and that had cavalry pushed on, or had the whole column advanced from Hápúr, so as to reach Galáothi before daybreak, the next day the four guns would have been taken. But not even previous successes would have warranted the advance of the reconnoitring party in the dark, into what looked so very like a trap, and it was considered too much for the men and horses to take them out again nine miles in the middle of the night, after they had just returned from their reconnoitre of nearly 18 miles. The news of the flight of the rebels was not received till too late, and so the gallant little party had not the satisfaction of bringing away the guns they so boldly silenced. Barthona, the village of our Ját allies, was attacked by the Málágarh rebels, the Jhānsi Brigade, and the guns of which they resumed possession when they recovered from their panic, and notwithstanding that the Jāts could not use their guns, being attacked at points on which the guns, by some arrangement immovable, did not bear, they beat off their assailants most gallantly, with a loss to themselves of only twenty-five killed and wounded. The news of the attack did not reach the Hápúr force in time for them to assist the Jāts. The Hápúr column had no further opportunity of distinguishing itself.

but remained out, fully accomplishing the object for which it was detached, till hastily summoned to Thána Bhawan, in the Muzaaffarnagar district.

“ On the 17th September an attempt was made to surprise the rebel tahsildár of Murádnagar, and a small force (243 cavalry and 80 foot police) of native cavalry and infantry, under Major Stokes and Captain Craigie, marched during the night and arrived at the town about 6 A. M. The position of the rebels was a strong one. Murádnagar has a brick wall on three sides and is surrounded with mango orchards, and at the time was almost concealed by high crops. The column was fired at, on approaching the wall, and a body of about two hundred horse came out on one side. A part of the cavalry was sent after them. The enemy attempted a charge, but their hearts failed them, and they turned and fled, pursued by the Multán cavalry led by Lieutenant Armstrong of the 59th N. I., so closely, that they had not time to shut the gate, and Lieutenant Armstrong and his men drove them before them, cutting up a number, through the village into the high cultivation on the other side, in which, after many had been killed, the rest got off. Subsequently, while Lieutenant Armstrong was engaged in clearing the village, he was suddenly attacked by a rebel trooper of the 9th Irregular Cavalry, who rushed at him, and having him at a disadvantage cut him down. An Afghán with Lieutenant Armstrong dismounted and killed the rebel and thus saved his officer's life. In the meantime Captain Craigie tried with his party to intercept another body of rebels. His men, newly raised since the mutiny, wanted confidence, and he himself with his native adjutant and one or two men outstripping the not over-zealous main body, got engaged with the enemy. The native adjutant, formerly a havildár in the 11th N. I., who had remained firm to his duty, not being a good horseman, was mortally wounded before Captain Craigie could save him, but the rebels found this well-trained cavalry officer and the few men near him more than they liked, and when the rest of the troops approached, fled. Though the rebel tahsildár escaped, the result of this expedition was most satisfactory: the rebels were driven completely out of the parganah and across the Hindan river, and from a large tract the collection of the revenue commenced. The road from Meerut to Dehli was opened; 57 of the enemy, among them many of the 9th Irregular Cavalrymen, were killed and 17 prisoners were taken. The loss on our side was one of Captain Craigie's men killed and one severely wounded; one risáldár and two dafadárs and three sawárs of the Multán horse slightly wounded. This little affair at Murádnagar was the last there is to relate. With the fall of Dehli, which occurred immediately afterwards, all hopes of the rebels and the rebels themselves disappeared and all fighting ceased. The Magistrate, with a party of mounted and foot police, made a tour of the district, seizing and summarily disposing of rebels. On the evacuation of Málágarh after the fight at Bulandshahr, mail-carts and dák carriages began to run, traffic recommenced, and soon the only

signs of the deadly strife were the blackened ruins of public and private buildings, the sad row of tombstones recording the dreadful deaths of those who were massacred, and the little entrenchment where, with numbers decreasing as the danger increased, a little band of Europeans amidst thousands and thousands of rebels, and within reach of Dehli, maintained the name of their country and the authority of Government. The Rohilkhand rebels kept a large force with artillery on the east of the Ganges, opposite the north-east part of the district; but the presence of a small party of mounted and foot police, and when they threatened invasion, two horse artillery guns and a small body of troops sent on requisition by the military authorities, checked them effectually, and though mustering about 6,000, with eight guns, they were never able to enter the district."

At the close of 1857, Major Williams, in his capacity of Commissioner of Military Police, investigated the conduct of the police in Meerut during the outbreak, and as the results of the evidence then collected go far to bear out the opinions of Mr. Fleetwood Williams they deserve some notice here. The evidence showed that the police had grossly neglected their primary duties of protecting property and quelling disturbances. In many cases Europeans were murdered in the sudder bazar and close to police-stations, and in some instances policemen in uniform headed the gangs of murderers. All were not, however, equally guilty: in the beginning some attempts were made to quell the outbreak and plundered property was recovered from the rioters, but these efforts were nipped in the bud by the head police officer, "who being himself a Gûjar, and moreover fearing the vengeance of the mob, would allow no further seizures to be made either of persons or property." Whatever the worth of the evidence may be, a careful examination of the depositions recorded by Major Williams shows (deposition 1) the existence of an ill-feeling on the part of the Muhammadans against the Christians, due to an impression that their religion was powerfully shaken, and in connection with it the cartridge question was discussed. It would also appear that on the committal of the troopers of the 3rd Cavalry to prison for refusing to use the cartridges rumours were rife that the sepoys were dissatisfied and would probably mutiny (depositions 4, 5). Beyond the fact of the visit of the wandering *fakîr* and his previous appearance in Umbâla nothing beyond mere suspicion can connect him with any movement towards mutiny. On the day of the revolt a Kashmîri girl, named Sophie, received intimation of the intended mutiny about noon, and this with the warning given to the kotwâli guard about half an hour before the outbreak, are the only signs of premeditation that have been made known. On the other hand, several native officials averred that they saw no signs of any impending revolt, and they believed "that evil reports, in the first instance, caused, and the uncontroverted boast of the

extermination of all Europeans rapidly spread the revolt." From the evidence of certain sepoy and troopers it would appear that no general warning was given to the whole body, nor was any unanimous plan of action concerted amongst them. Although some days before the outbreak two Musalmáns, naiks of the 3rd Cavalry, swore in the men of their regiment to refuse the cartridges, said by a magazine employee to be greased with cow's and pig's fat, until their use was sanctioned by the whole native army; and though the evidence of others shows that some few were prepared to act for the liberation of their comrades, yet that they must have consisted of a portion of the men only, since many of the sepoy undressed and unarmed were, according to their usual wont, lounging about the bazars, totally unprepared to the last moment, and only when the cry was raised that "the Rifles and Artillery are coming" did they fly to their lines. And it would seem that this was done "more from some undefinable dread of something about to happen than to carry out any preconcerted plan of action, for amongst them were some who sided with and defended their officers to the last; that alarming reports, in the first instance, of polluted food to be forced upon all, and subsequently of sets of irons sufficient to confine the whole force being in course of preparation; and finally, on the evening in question, of the start of the rifles and artillery for the purpose of disarming all the native regiments circulated by a cook-boy of the rifles and the bazar people, and confirmed by a sawár coming from the direction of the Brigade-Major's house, were the immediate cause of the mutiny; that a recruit of the 20th Native Infantry, who fired the first shot (and is said to have been killed by his comrades for thus involving them in ruin and disgrace) implicating them in their estimation beyond recall; and the death of Colonel Finnis sealing their doom, nothing but flight and desertion could save their lives; that the detached guards did not break out simultaneously with the regiments, but that some even remained at their post a day or two after, and that the others, hearing rumours of the cause of the firing, hastened to stand by or fall with their brethren in arms; that, moreover, such was their unpreparedness that their wives and families were left behind unheeded and uncared for, who roved about the town for some days seeking food and shelter, and from thence disposed of themselves as best they could."

"Some depositions prove that the sawárs contented themselves with releas-

The people generally ing their comrades only; that the rest of the prisoners were unprepared. in that jail were subsequently let loose by a mob of villagers, and those of the old jail by sepoy of the 11th and 20th Native Infantry. Other depositions bear witness to the friendly conduct of some cavalry troopers, who, in one instance, dispersed the mob that attacked Mrs. Courtney's carriage, and in another case warned soldiers walking in the bazar to fly. The mutineers fled as a disorganized mob, in bands varying in numbers, and in

different directions, many towards Dehli, but others in totally opposite quarters, and the jail guard, on being met and questioned, stated they had fled in dismay from fear of being involved in the consequences of the revolt. The depositions of all the Europeans prove the total inaction of the police as regards the murdering and plundering by the mobs; and in many instances the actual murder and attempts at murder of Europeans by mobs and policemen; the former being often headed and incited by the latter; and in some few instances of the bad characters being accompanied and assisted by sepoys and sawárs. The depositions of the city and bazar residents, as also those of all the Europeans, testify to the total want of preparation on the part of the inhabitants of both, as evidenced by the shops being open, trade carried on as usual, travellers journeying unarmed to and fro, realizing money, &c., some of whom were plundered and maltreated by the mobs, to whom all concur in chiefly ascribing the plundering, burning, and murdering that occurred. The depositions of the native residents also show that they ascribed the mutiny to the evil rumours that were afloat and the fears cherished in consequence by the sepoys for the safety of their caste and religion; also their conviction that the excesses committed by the mobs resulted from the prevailing belief that the Europeans had been exterminated by the native troops; and the withdrawal, in consequence, of all fear of retribution, as the reaction that took place the next morning clearly proves; for when they found the Europeans were still alive and in force, they rapidly disgorged their ill-gotten plunder, and many fled. Several depositions, also, prove how much loss of life and property might have been avoided, and how much good effected by a little energy and decision, by the presence of even a handful of Europeans patrolling the streets during that ever memorable night. Other depositions prove the mutilation of European corpses, but only of those away from the sepoy lines, and which must have been perpetrated by the mobs; while those apparently killed by the troops were left as they fell." Since the mutiny nothing has occurred to disturb the peace of the district, and all matters of interest naturally fall under the different heads into which the district notice has been divided.

The only endemic disease in the district is malarious fever, which has increased considerably since 1865. On this subject Dr.

Medical history.

Moir writes as follows:—"It is a well-known fact that

defective drainage is an essential element to the production of malaria, and it is believed that a considerable portion of the district has been modified in this respect by the railway which has been opened since 1867, and which runs through fifty miles of this district. Whether there has been or not an increase of fever in all parts of the district remote from the railway I am unable

Fever.

to say, but to show that there has been a marked increase, I subjoin tables showing the ratio of fever

cases to all cases treated at the Meerut and Hapur dispensaries for the years 1867 to 1871—

MEERUT.

Year.	Total cases treated.	Fevers.		Diarrhœa.		Dysentery.		Inflammation and hypertrophy of spleen.	
		Total cases.	Ratio per 1,000.	Total cases.	Ratio per 1,000.	Total cases.	Ratio per 1,000.	Total cases.	Ratio per 1,000.
1867,	9,518	946	99.39	312	32.77	96	10.08	42	4.41
1868,	13,966	1,218	87.21	395	28.28	166	11.88	51	3.65
1869,	14,149	1,582	111.81	487	34.41	269	19.01	52	3.67
1870,	14,240	2,085	146.41	439	30.82	273	19.17	140	9.83
1871,	19,745	3,732	189.01	698	35.35	493	24.96	631	31.96

HAPUR.

Year.	Total cases treated.	Fevers.		Diarrhœa.		Dysentery.		Inflammation and hypertrophy of spleen.	
		Total cases.	Ratio per 1,000.	Total cases.	Ratio per 1,000.	Total cases.	Ratio per 1,000.	Total cases.	Ratio per 1,000.
1867,	3,052	382	125.15	90	29.48	89	29.16	28	9.17
1868,	3,327	320	96.18	80	24.04	139	41.78	14	4.20
1869,	3,860	421	109.07	115	29.79	107	27.72	7	1.81
1870,	4,523	870	192.35	140	30.95	130	28.74	15	3.31
1871,	4,963	723	177.94	79	19.44	123	30.27	15	3.69

The above statements show a marked increase of fever and its sequelæ. This district is greatly under the influence of canal irrigation ; to the excess of irrigation, to the obstruction of the natural drainage by the canal, and its raj-bahas, as well as by the railway, is due, according to most authorities, the malaria which so grievously afflicts the people in the months of August, September, October, and November of each year, during and after the termination of the rains.

Since writing the above, I have seen a second memorandum by Dr. Moir on fever in the Meerut district, and glean from it the following particulars :—In this district there are 1,666 villages, and, excluding the 11 town circles, there are 40 rural circles, and thus each rural mortuary circle contains on an average 41 villages, with a mean population of 673 persons to each village.¹ The mode of collecting the mortuary

¹ Sanitary Report for 1874, Appendix I.; see also Gazetteer, II., 128.

statistics of each village is as follows :—The village watchman goes once a week to the registering office of his circle, often nine or ten miles distant, to report

He thinks the present statistics are incomplete. the deaths for the week as far as he can remember them. In the sickly season of the year a great number of deaths must thus escape registration, and to add to the uncertainty, the watchman often becomes ill, and there is no one to take his place. The registering offices are also so placed as to meet the police requirements, and are not arranged with any reference to the convenience of mortuary registration; but at the same time it must be noted that this is an error which can easily be rectified by making the police-station the centre of a circle, and not, as it now often is, on the boundaries or in a corner of a circle. Dr. Moir thinks that it is unsafe to draw conclusions from results thus obtained, and that Government must adopt other means in collecting statistics which will enable correct inferences to be drawn as to how far canal irrigation is injurious to the health of the people. He proposes generally the adoption of each village as the unit of registering population, and not the circle, and the collection of data regarding the area in each village watered from the canal, the nature of the soil, subsoil, rise and fall of water-level, the rainfall, drainage and the kind of crops produced. "These observations," he writes, "should be made over an extended area and carried on in the vicinity of canals and also in adjoining localities, but at a distance from canals, and not irrigated from them. The want of a series of observations of this sort, as it seems to me, has led, and will continue to lead, to assertions and counter-assertions as to the influence of the canals, all equally incapable of proof." He finally proposes a special committee, as "the mortuary returns we now possess afford no solution of the vexed question."

From figures given by Dr. Moir it appears that for the four years 1871-74

Deductions from existing statistics. the mean fever mortality in the villages watered by the Eastern Jumna canal has been 16·33 per thousand; in the Ganges canal group it was 28·50, and in the Anúpsahr branch group it was 20·11, giving a mean for the entire canal-irrigated villages of 22·8 per thousand. This appears greatly in favour of the western canal as compared with the Ganges canal and its branches, but the registration in Bágpat for 1871, which gave a total death-rate of only 6·5 per thousand, is so manifestly erroneous that the figures for the Eastern Jumna canal must be rejected as entirely untrustworthy. Still it may be gathered that the death-rate is higher along the Ganges canal, but whether this result is only due to better registration, or is really caused by a more extensive water-supply and worse drainage, cannot be positively asserted. Strange to say, however, the recorded death-rate from fever in the circles not irrigated, or but partially irrigated, from canals is very high. The mean for the same years in Daha was 16·22 per thousand; in Kumruddinnagar was 15·97; in Ioni, 20·21; in Shahdara, 20·21; in

Gházíabad, 23·48; in Kharkoda, 31·95; in Hápur, 24·40; and in Mau khás, 23·73 per thousand, giving a mean mortality of 23·73 per thousand. The circles of Daba, Kumruddínnagar and Hápur have no canal irrigation, and Kharkoda apparently none, yet the average death-rate is nearly the same as in the canal-irrigated circles, and the first inference from this result would be that canal-irrigation exercises no prejudicial influence on the public health, so that more minute observations and details regarding the soils and population is necessary before any sound conclusion can be arrived at. Taking the urban population, the mean ratio for the same years of deaths from fever in seven towns removed from canal irrigation was as follows:—Meerut city, 35·47; Meerut cantonments, 28·26; Hápur, 28·09; Garhmuktesar, 17·10; Bágpát, 30·09; Gházíabad, 29·39; and Pílkhuá, 41·79. These averages give a mean of 31·43 per thousand calculated on a total population of 124,866. Three towns near to canal irrigation give an average death-rate as follows:—Sardhana, 23·82; Baraut, 32·84, and Mawána, 11·61, or a mean of 24·14 on a total population numbering 27,587 souls. These figures, too, would apparently show that towns situated in the midst of canal irrigation are actually more free from fever than those at a distance from its influence. Bágpát, with its excellently drained site on the high bank of the Jumna, has suffered more than lowlying swampy Sardhana, with its imperfect drainage.

The epidemic invaded the district in 1870 from the north-west from Sahá-raupur and Muzaffaranagar, and a comparison of the Mortality amongst the troops. statistics for the years 1871 to 1874 of the villages situated along the northern border with those lying along the southern border shows that in the northern circle the epidemic is on the decrease, while in those to the south it is increasing. The careful returns kept up in Meerut cantonments for the troops, the civil hospital, and the jail, all point to an abnormal increase in the fever admissions since 1869. Between 1865 and 1869 there was no increase from fever amongst either the European or the native troops, rather a decrease. Among the civil hospital patients there was a tendency to an increase, more marked, however, in the jail population. “But during the five years 1870-74 there has been a marked increase of sickness among all these bodies. The ratio of fever admissions rose from 371 per 1,000 of strength in the first five years to 838 in the last five. Among European troops and among native soldiers the rise was from 357 to 1,108. In the civil hospital the fever increase was from 93 to 201 per 1,000 of total treated; in the central jail the first five years give a mean ratio of 158 per 1,000 of strength, and in the last quinquennial period it is 750 per 1,000. Thus fever has more than doubled among European soldiers and in the civil hospital, more than trebled among the native soldiers, and more than quadrupled in the central prison. In the European regiments there was a slight increase, during the last five years, of

spleen affections, dysentery, and hepatitis, and a decrease of diarrhœa. The admissions from all causes rose from 1,500 to 1,936 per 1,000, and are accounted for by the fever. The deaths fell from 35 to 30 per 1,000 from all causes in the same period."

After a comparison of admissions from malarious fever and all causes, and General character of the health of Meerut. the death-rate of particular corps of European troops in Meerut from 1865 to 1874, Dr. Moir writes:—
 "An examination of these returns leads me to the conclusion that no regiment has deteriorated in health by its residence here, for were it not so it would exhibit a ratio of sickness on its departure greater than the other corps in the garrison. I have confined my remarks to fever alone, as it is the principal cause of the admissions. That there has been a great increase of fever at Meerut of late years among all classes of people is most certain and very remarkable, but how to account for the fact is a very difficult matter. Some attribute it to an increased rainfall, others to defective drainage and canal irrigation, and others again chiefly to a rise in the subsoil water in this station. A comprehensive view of the facts leaves in my mind great doubts as to the special causation of this outbreak of fever. As to drainage, though very defective in the lines of the native regiments and in the bazars and native city, it is so good around the barracks of the European regiments as to require and to be susceptible of little improvement. Meerut has been improved since 1867 by the making of a deep cut north of the station which prevents the Abu Nâla from overflowing after heavy rainfalls. This has been effected, and the Abu Nâla itself was some years ago slightly improved. The central prison, too, two years ago had a new scheme of drainage carried out, yet, in spite of these partial improvements in drainage, the fever has gone on increasing. The sub-soil water-level has been gradually rising since 1869, if not before. On the 25th September of that year I found the water 14 feet two inches below the surface of the ground, as near as I could judge, taking the ground level without any instrument. On 31st October, 1869, the water was 14 feet below the surface. On the same date in 1870 it was 13 feet 1 inch; in 1871, 12 feet 3 inches; in 1872, 12 feet 1 inch; in 1873, 11 feet 7 inches; and in 1874, 9 feet 5 inches. In connection with this rise of the spring level comes the question whether this fact in itself is sufficient to account in any, or to what, degree for the prevalence of fever."

The connection, however, between the rise in the water-level and sickness, Dr. Moir contends, has not yet been clearly made out, nor would he say that the obstruction of drainage by the rajbahs is anything more than a possible cause of fever. He also refers to the epidemic of malarious fever which occurred in 1817-21, before either of the canals were even surveyed; to a second which occurred ten years later; and to a third in 1843, which has been noticed elsewhere. Some suggest that the disease is an epidemic fever of a typhoid type,

but Dr. Moir states that "among none of the patients belonging to Meerut, nor among the police brought in for treatment from all quarters of this district, during the course of this epidemic, have I found true enteric or typhoid fever in a single instance." I have given the opinions of Dr. Moir at some length, as from his careful study of the question, and his lengthened local experience, they are deserving of every attention. The balance of evidence, I still think, goes to show that the epidemic is aggravated by the presence of excessive moisture in the soil whether due to canal irrigation or defective drainage in places not irrigated by the canal, and that the degree to which over-saturation is a cause of excessive mortality, and the amount of it necessary to produce the disease are alone subjects of discussion. The inquiries of Cutcliffe, Planck, and others, clearly demonstrate the connection between a high spring-level and malarious fever, and leave little to be desired in this direction.

Small-pox, as a rule, only visits the district at intervals. Between 1864 and 1872 there were only two outbreaks, and neither of these was very severe. Cholera was brought down by the pilgrims from Hardwar in 1867, in the middle of April. It was most prevalent during April, May, and June, then abated a good deal till towards the end of August, when it attacked the 3rd Buffs, stationed in Meerut cantonments, in the most virulent form. Almost every case that appeared in this regiment proved fatal. Amongst the native population only 33 per cent. of those treated in hospital died.

Cholera.

After October there were few deaths recorded in the district. It is remarkable that the cholera was prevalent amongst the native population from the 15th of April, but it did not appear amongst the Europeans until the 15th August, and then almost confined itself to the one regiment. There were only seven cases amongst the Artillery, whose strength was equal to the Buffs, and whose barracks are only a continuation of the infantry lines, whilst among the XIXth Hussars there were only two deaths. The Buffs lost upwards of 130 men in two months, and the percentage of fatal cases to those treated in hospital of the entire European garrison was 92·81. The following statement gives the causes of death as registered by the mortuary registrars for eight years:—

Year.	Fever.	Small-pox.	Bowel complaint.	Cholera.	Other causes.	Total.	Percentage of deaths to 1,000 of the population.
1867, ...	10,287	914	1,087	4,073	3,392	19,753	16·40
1868, ...	8,425	294	2,061	318	2,553	14,354	11·89
1869, ...	9,626	4,984	908	565	3,133	19,221	16·00
1870, ...	20,263	2,218	...	118	4,315	26,914	22·41
1871, ...	28,623	1,307	2,928	84	1,941	34,883	29·05
1872, ...	38,209	826	2,983	510	2,678	45,206	35·53
1873, ...	26,078	2,508	2,428	53	1,847	32,909	25·80
1874, ...	28,910	1,023	1,990	5	2,249	34,177	26·82

GAZETTEER

OF THE

MEERUT DISTRICT.

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AJRĀRA, a village in parganah Sarāwa of the Meerut district, is distant from Meerut 11½ miles. The population in 1865 was 2,870 ; in 1872 it numbered 3,124 souls. Ajrāra was formerly the head of a parganah, and from it the present parganah was known as Sarāwa Ajrāra. The parganah was absorbed in 1853. The place is said to have been the seat of a Hindu monarchy previous to the irruptions of the Musalmāns. Ajipāl, a Jogi, built a Thākurdwāra here and called the place Ajipāra, now corrupted to Ajrāra. The British Government now makes a contribution from the village in aid of the temple. In the time of Muhammad Shāh, Khwāja Basant Khān obtained Ajrāra with other villages

in *jāgr*. He built a fort, which was razed by the Marhattas in 1202 *fasli* (1794 A.D.) on the rebellion of Fateh Ali Khán, brother of Khwájá Basant Khán. The possessors now are Taga Musalmáns.

AUPERA, a village in parganah Hápur of the Meerut district, is distant 20 miles from Meerut. The population in 1872 numbered 1,864 souls. There is a police-station here on the Hápur and Garhmuktesar road.

BÁBUGARH, a village in parganah Hápur of the Meerut district, is distant about three or four miles from Hápur. In 1865 the population, including that of the stud lands, was 2,040, and in 1872 was 2,165. The Government stud is here, of which the stables were built in 1823. The place is inhabited by Dhé Játs, Sáises, and Chamárs. The population of the village proper in 1872 was 575.

BÁGPAT or Bághpat, the chief town of the parganah of the same name in the district of Meerut, is situated on the left bank of the Jumna, 30 miles from Meerut. It is said to have been one of the five '*pats*' mentioned in the Mahábhárata. Its original name appears to have been Vyágrha-prastha, or 'place of tigers.' The other '*pats*' were Sonpat, Pánipat, Tilpat, and Indarpat, the settlements of Yudhishtíra in the Khándava forest. Another derivation of the name is Vákya-prastha, 'the place of speech.' The name Bágpát was subsequently changed to Bághpat by one of the Dehli emperors. The population in 1847 was 6,494, in 1853 was 7,377, and in 1865 numbered 7,887. In 1872 there were 7,367 inhabitants, of whom 2,180 were Musalmáns (1,052 females) and 5,187 were Hindús (2,320 females), consisting for the most part of Chauhán Rajpúts. The Mahájans (Saraugis) established in the *mandi* built about 110 years ago by Zábíta Khán are the most important of the residents. A large fair is held here every year in February. There are two saráis, one poor one on the southern outskirt, and one, unfinished, to the east. The latter was commenced by the late Karam Ali Khán, tahsildar of Gháziabad, whose family residence was here. The tahsili, which was removed here from Baraut after the mutiny, is situated opposite the police-station on the Meerut road. A new dispensary has been built behind the tahsili. There are a fine Saraugi temple, a good-looking Vaishnava temple, and three mosques in the town. There are also a post-office and a good encamping-ground, with water and supplies in abundance. Houses with ornamental fronts are by no means raro, and altogether the place merits the attention that has recently been given to it. Bágpát was one of the halting-places of the Mughal army in their raid into this district in 1399 A.D.

Bágpát is divided into two portions: the *kasbah* or agricultural portion, and the *mandi* or trading quarter. The former lies close to the Jumna, amongst the ravines on the edge of the cliff, which carry the drainage to the river below. The inhabitants are chiefly

The site.

Chauhán Rajpúts, who cultivate the town lands and graze large herds of cattle here and on the opposite bank. The houses are brick-built; the people, a hardy race, fond of pig-sticking and said to have given assistance to the British troops before Delhi in 1857. The *mandi* lies to the north of the *kashah* about half a mile from the river, on a well-raised site, which, also, has a good drainage fall towards the river. The remains of a surrounding wall and six gateways are still visible. One wide street runs from north to south, and another from east to west, having an open *chauk* at their point of intersection; a second *chauk* exists further to the west, where a second street runs from north to south. The first of these streets forms the principal bazar, and is well lined by good shops, and all the streets are well kept, metalled, and drained, showing an appearance of cleanliness and prosperity not often met with. Outside the town, on the north, the Meerut metalled road passes to the bridge-of-boats, and to the west and south a second large unmetalled road leads to the same point. The water in wells is found at a depth of 35 feet from the surface, and is sweet and good. The general health is good, and canal irrigation does not approach nearer than within three miles. For an old town and an increasing one there are few excavations about, and none containing much stagnant water.

The municipality of Bágpát is managed by a committee of thirteen members, of whom three are official and ten are elected by the tax-payers. The income is derived from an octroi tax, which in 1872-73 fell at Re. 0-15-6 per head of the population. The following statement shows the income and expenditure for three years:—

Receipts.	1871-72.	1872-73.	1874-75.	Expenditure.	1871-72.	1872-73.	1874-75.
Opening balance, ...	1,896	2,218	3,426	Collections, ...	1,064	965	890
Class I. Food and drink, ...	6,477	5,909	1,709	Head-office, ...	97	158	35
" II. Animals for slaughter, ...	7	32	273	a. Original works, ...	...	4,556	880
" III. Fuel, &c., ...	86	122	165	b. Repairs, ...	3,379	274	2,243
" IV. Building materials, ...	166	253	226	Police, ...	2,811	1,587	1,670
" V. Drugs and spices, ...	134	194	251	Charitable grants, ...	206	197	431
" VI. Tobacco, ...	37	35	57	Conservancy, ...	435	504	504
" VII. Textile fabrics, ...	325	526	439	Road-watering, ...	13	76	120
" VIII. Metals, ...	64	101	102	Lighting, ...	...	284	213
Total octroi, ...	7,296	7,172	3,222	Gardens, ...	600	403	...
Tolls on carriages, ...	207	...	2,404	Miscellaneous, ...	...	204	234
Gardens, ...	79	67	...	Education, ...	...	...	360
Fines, ...	56	51	58				
Pounds, ...	15	66	105				
Extraordinary, ...	325	64	6				
Miscellaneous, ...	511	742	292				
Total, ...	10,385	10,380	9,513	Total, ...	8,105	9,038	7,741

The following statement shows the imports and consumption per head of the population in 1872-73 :—

Articles.	Net imports in quantity.	Net imports in value.	Consumption per head.	Articles.	Net imports in quantity.	Net imports in value.	Consumption per head.
	Mds.	Rs.	M. s. c.		Mds.	Rs.	M. s. c.
Wheat, ...	10,298	17,933	1 15 14½	Animals for slaughter, ...	...	1,024	...
Other grains, ...	20,222	46,001	...	Wood, ...	4,799	1,062	...
Gúr, ...	34,069	1,01,226	4 24 15	Oil, ...	118	1,421	0 0 10
Shíra, ...	4,385	8,976	0 23 13	Oil-seed, ...	1,889	4,251	0 7 9
Shakr, ...	4,802	4,802	0 26 1	Building materials, ...	270,752	8,100	...
Khánd, ...	6,741	5,381	0 36 9	Gums, ...	60	156	...
Pán, ...	50,400	170	...	Spices and Kirána, ...	1,131	3,987	...
Fodder, ...	3,579	5,131	0 19 7	Tobacco, ...	163	556	...
Vegetables, ...	4,915	4,867	0 26 11	Cloth, ...	...	30,058	...
Ghi, ...	400	8,695	0 2 3¾	Metals, ...	780	6,714	...

Similar statistics are obtainable for each year since the municipality was established. Bágpát is the great sugar mart of the district, and the imports given above do not represent the actual import, only that on which duty is paid as for local consumption. The total trade in 1870-71 was estimated at 350,353 maunds of saccharine produce. The principal ganj is one large sugar market, where the *gúr* is collected in large quantities in cakes of about four sers each, and distributed by cart and river to the Panjáb, Rajputána and Bundelkhand. Boats move down the river to Dehli, Agra, and Kálpi, and carts cross to Pánipat, Karnál, Ambála, and Lahor. The communications inland are also good, and the trade is increasing every year. Besides *gúr*, the exports to Agra and Muttra comprise cotton, wheat, red pepper, *saji*, *Multáni matti* (Armenian bole), and *dhák* bark, and in return red stone, mill-stones, *khali* (oil-cake), and fodder are received.

BÁGPAT or Bághpat, a parganah in the tahsíl of the same name in the Meerut district, is bounded on the north by Kutána, Baraut, and Barnáwa; on the east by Meerut and Jalálabad; on the south by Loni, and on the west by the Jumna river, which separates it from the Panjáb province. According to the census of 1872 Bágpát had a total area comprising 194 square miles and 55 acres, of which 158 square miles and 334 acres were cultivated. The area assessed to Government revenue amounted to 190 square miles and 557 acres, of which 155 square miles and 375 acres were cultivated. Of the remainder 17 square miles and 520 acres were shown as culturable.

To the north the soils approach in character the rich black loam of Kutána and Baraut, but to the south they gradually lose this distinctive feature and merge into the ordinary soils of

Condition of the parganah.

the district. In common with other parganahs the estates lying on the edge of the uplands present a surface broken up by ravines, or too high for the ordinary canal levels, and without capability for well-sinking. They are, however, often compensated by the fertility of the sloping lands leading down to the *khádír* or river-bed lands. Here wells are easily constructed, and from the slope irrigate a larger area, yielding fine crops of sugarcane, cotton, tobacco, and wheat. On these lands the Játs bestow all their energies, leaving the unirrigated high lands for the rain-crop, and in favourable seasons a cold-weather crop also. The Eastern Jumna canal fully waters the entire inland tract right up to the edge of the dividing cliff. Cultivation has increased during the currency of the past settlement from 73,506 acres to 98,369 acres, whilst irrigation has more than quadrupled, rising from 14,167 acres to 59,064 acres. The irrigation from wells (596 masonry and 809 earthen) amounts to 22,938 acres, whilst tanks water 1,288 acres, leaving the large area of 34,838 acres watered by canals.

The Játs, who are masters of the parganahs to the north, here share the soil with other castes. They hold 32 estates with shares in 19 others; Tagas hold 20 with shares in 14 others; Brahmans hold ten estates and shares in 24; Hindu and Musalmán Rajpúts hold eleven estates and own shares in 15 others; Gosháins hold two whole estates and shares in a third, and Ahírs hold 18 estates and shares in six others. Mr. Forbes remarks that the cultivating classes are found in the same proportion. Játs cultivate themselves fifteen estates without any assistance from other classes, and in addition cultivate lands as proprietors or tenants with others in 45 estates. The Tagas, on the contrary, only manage three of their estates without assistance, the Rajpúts one, the Ahírs seven, and the Brahmans six. The Gosháins have married and settled down and make excellent cultivators. The transfers during the past settlement are very small, amounting only to 9,365 acres out of 123,677 acres by sale and 1,327 acres by mortgage; money-lenders have only obtained a lien on 737 acres and are also found amongst the sellers. The general history of the past and present settlements and other matters affecting the economical history of the parganah have been sufficiently indicated in the district notice. Sir H. M. Elliot found it difficult to fix the assessment of this parganah because of combinations amongst the leading men which he found deterred many from coming forward to engage. The consequence was a low rate of Re. 1-11-11 per acre, which when compared with Kutána (Rs. 3-4-1½) and other similarly situated parganahs shows a great sacrifice of the Government demand. On this account Mr. Forbes has found it difficult to pull up at once the revenue to its proper level.¹

¹ The settlement report of Mr. Forbes and the minute of the Board of Revenue on this subject should be consulted.

The following statement compares the details of the former and existing settlements : —

Period of settlement.	Total area.	Barren and Revenue-free.	Cultivable.	Cultivated.			Total assessable.	Land-revenue.	Revenue-rate on cultivated area.
				Wet.	Dry.	Total.			
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Rs.	Rs. a. p.
Former, ...	121,897	26,511	15,434	14,167	65,785	79,952	95,386	148,220	1 13 8
Present, ...	124,129	12,690	12,870	59,064	39,306	98,369	111,239	210,035	2 2 2

According to the census of 1872 parganah Bāgpat contained 120 inhabited villages, of which 17 had less than 200 inhabitants; 40 had between 200 and 500; 26 had between 500 and 1,000; 27 had between 1,000 and 2,000; 6 had between 2,000 and 3,000; and 3 had between 3,000 and 5,000. The only town containing more than 5,000 inhabitants is Bāgpat itself with 7,367 inhabitants.

The total population in 1872 numbered 108,168 souls (49,391 females), giving 558 to the square mile. Classified according to religion there were 91,405 Hindus, of whom 41,506 were females; 16,762 Musalmans, amongst whom 7,885 were females; and one Christian. Distributing the Hindu population amongst the four great classes, the census shows 12,394 Brahmans, of whom 5,691 were females; 4,597 Rajpúts, including 2,025 females; 5,504 Baniyas (2,455 females); whilst the great mass of the population is included in "the other castes" of the census returns, which show a total of 68,910 souls, of whom 31,335 are females. The principal Brahman subdivisions found in this parganah are the Gaur (11,214), Bhát (184), Saraswat (55), Dakaut (85), Acháraj (262), Gujrátí and Chaurasiya. The Rajpúts belong to the Chauhán (1,392), Tonwár (557), Dhangar, Kachhwáha, Kachhuwa, Mohil, Dahima, Gahlot, and Gaur clans; and the Baniyas to the Agarwál (4,319), Sarangi (649), Dasa, Gindauriya, and Bishnoi subdivisions. Amongst the other castes the following show more than one thousand persons each :—Taga (4,604), Jogi (1,525), Garariya (1,007), Kahár (2,947), Hajjám (2,175), Barhai (1,594), Lohár (1,319), Ját (12,529), Kumhár (1,853), Chamár (11,961), Bhangí (5,150), Gújar (8,170), and Ahír (6,960). The following show less than one thousand members :—Máli, Koli, Sonár, Bharbhúnja, Dhúna, Juláha, Gosháin, Bairági, Khattri, Káyath, Chhípi, Kalál, Dhobi, Nat, Lodha, Khatík, Teli, Dhanak, Fakír, and Orh. The Musalmáns are distributed amongst Shaikhs (10,250), Sayyids (106), Mughals (35), Patháns (2,089) : the remainder are unspecified.

The occupations of the people are shown in the statistics collected at the census of 1872. From these it appears that of the male adult population (not less than fifteen years of age), 932 are

employed in professional avocations, such as Government servants, priests, doctors, and the like; 3,539 in domestic service, as personal servants, water-carriers, barbers, sweepers, washormen, &c., 2,443 in commerce, in buying, selling, keeping or lending money or goods, or the conveyance of men, animals, or goods; 18,332 in agricultural operations; 4,632 in industrial occupations, arts and mechanics, and the preparation of all classes of substances, vegetable, mineral, and animal. There were 5,829 persons returned as labourers and 1,165 as of no specified occupation. Taking the total population irrespective of age or sex, the same return gives 28,857 as landholders, 23,042 as cultivators, and 56,269 as engaged in occupations unconnected with agriculture. The educational statistics, which are confessedly imperfect, show 2,576 males as able to read and write out of a total male population numbering 58,777 souls.

Previous to 1841 parganah Bágpát contained 165 villages and 166 estates, of which ten were revenue-free. In 1841 six were
Changes. gained and five were transferred. Again in 1852 two were received and 21 were transferred, leaving 147 villages and 148 estates. Since then 22 new estates have been formed by partition and two have been joined. Nine revenue-free estates have been resumed, and at the recent settlement the numbers were 147 villages (one revenue-free) and 169 estates. Amongst the important villages in this parganah not having separate mention may be noticed the old Rajpút village of Daula, with a population of 3,161 in 1865; Tatúri, inhabited by Rawas, with a population of 2,420; Dahkhauri, with a Ját population of 3,888; Singauli, with an Ahír population of 2,626; Pahládpur Khatka, with Rajpút inhabitants, 2,751; the Ját Kátha, containing 2,691, and Amínagar Saráí, founded by Amín-ud-dín in the reign of Jahángír, and containing a population of 2,679.

BÁGPAT or Bághpat, a tahsíl of the Meerut district, comprises parganahs Bágpát, Baraut, Kutána, and Chhaprauli. The total area, according to the census of 1872, then, contained 401 square miles and 418 acres, of which 322 square miles and 177 acres were cultivated. The area assessed to Government revenue comprised 398 square miles and 250 acres, of which 319 square miles and 184 acres were cultivated, 34 square miles and 498 acres were culturable, and 44 square miles and 204 acres were barren. The land-revenue for the same year amounted to Rs. 5,14,660 (or with cesses Rs. 5,66,312), falling at the rate of Rs. 2 per acre on the total area, at Rs. 2-0-4 per acre on the area assessed to Government revenue, and at Rs. 2-7-11 on the cultivated acre. The total population numbered 247,944 souls (113,797 females), giving 617 to the square mile, distributed amongst 237 villages. The same statistics show 16 insane persons, 10 idiots, 25 deaf and dumb, 456 blind, and 20 lepers in the tahsíl. All other matters pertaining to the history or description of the tahsíl will be found under the district notice and separately under each parganah.

BAGSAR or Baksár, also known as Bazár Gangadharpur, a town in parganah Garhmuktesar and tahsili Hápur of the Meerut district, is distant 23 miles from Meerut. In 1865 the population was 1,807, and in 1872 was 1,937. There is a second-class police-station here. It is said to have been one of the muhallas of Hastinápur. The village was given in *jágir* to Nanak Sháhi fakirs. The following account of this fakir colony was obtained from the present Mahant: "The *mudfi* (revenue-free) villages granted to us by Alamgír II. were six in number: we have all of them to the present day. Four are in this district, *viz.*, Bagsár Lilsári, Muhammadpur, Khadályá, and Gordhanpur. We have had Bagsár for head-quarters for more than one hundred years. The Mahant in Alamgír II.'s time was Bába Dargáhi, and he got the *muáfi* grant extended to his *chela* Mast Rám. In Lilsári, Bába Dargáhi performed penance (*tapasya*), and his *samádhi* is in that village. On the Basant Panchami (January or February) of each year a fair is held at the spot. Mast Rám was succeeded by Ganga Rám, and he by Sháhzádah Sháh, and he by me. Every one, fakir or traveller, is entitled to one ser of flour a day, for our institution is a *saddbati* (or perpetual frankalmoigne). This system was inaugurated by Mast Rám. None of us have wives, *i. e.*, we are not *grihasthas*. The ruling Mahant chooses in his lifetime his successor, the man whom he esteems wisest and fittest. No objection can be raised to his selection. In Bagsár we have from 50 to 60 Nának Sháhi fakirs and a few at Lilsári. Bába Dargáhi was *parota*, or fourth in descent from Nának Sháh. We admit as *chelas* Brahmans, Khattris, Játs, Baniyas, and Káyaths only. The *chelas* when young are instructed in reading and writing, and all are supported out of the revenues of our villages. We have no marks on our bodies denoting that we are fakirs. Our distinguishing marks are high-peaked caps and a *saili* (necklace). Our mode of writing is called Gurumukhi. We teach the Gurugranth to our *shelas*. There is no restriction regarding the *choti* (tuft of hair) or the wearing of hair. The first ceremony a *chela* has to go through is a public bathing and 'having.'"

BAHADURGARH, a village in parganah Púth and tahsili Hápur of the Meerut district, is distant 32 miles from Meerut. This place had in 1865 a population of 2,353 souls, and in 1872 of 2,726. The village was bestowed by Jahángir on Nawáb Bahádur Khán, Pathán, who changed the name of the place from *Garh Nána* to Bahádurgarh. It was the head of a Pathán *halka*, or circle of 12 villages. The people are quarrelsome, and it has been once found necessary to hold the estate by direct management. At Mustafabad, in the north of his parganah, is the small village of Rája Karan, long ago in ruins. The spot is now known as Rája Karan-ká-khera, and is said to mark the site of a village founded by the Karna mentioned in the Mahábhárata. There is a district post-office here.

BAHRAMBAS, a small village of 258 inhabitants in parganah Hápúr of the Meerut district, is distant 23·6 miles from Meerut. It has a police-station.

BAHSÚMA or Bihsambha, a town in parganah Hastinápúr and tahsíl Mawána of the Meerut district, lies 23 miles from the civil-station on the Bijnaur road. The population in 1865 amounted to 4,184, consisting for the most part of Játs, Gújars and Baniyas, and the population in 1872 was 3,995, occupying 1,290 houses. Tradition says that this place was one of the muhallas of Hastinápúr in which the Vaisyas were located. The town is now greatly diminished in importance since Rája Nain Singh's government was removed from it. It is said that a hundred years ago there were 22 bankers who granted drafts in the place. Raja Nain Singh's house is here, and also a fort built by him. Nain Singh had other forts in this parganah, at Niloha, Sonda, and Muhammadpur Sikahra. The saddlery of Bahsúma is noted in this district for its excellence. There are good encamping-grounds, a second-class police-station, a post-office, and a market every Tuesday.

The Chaukidári Act is in force in Bahsúma, and in 1873 supported a village police numbering five men of all grades at an annual cost of Rs. 282. This is met from a house-tax, which in 1872-73 yielded a revenue of Rs. 930, falling at Re. 0-3-8 per head of the population and Re. 1-0-4 per house assessed (911). The expenditure during the same year was Rs. 491.

BALENI, a village in parganah Bágpat and tahsíl Gháziabad of the Meerut district, is distant 15½ miles from Meerut. It is a village of great antiquity, peopled by Ahírs. The name is said to be derived from the sage Válmiki, whose *asthana* was in this place when a jungle. A temple was built on the fabulous spot a short time since. There is a ferry,¹ a second-class police-station, and a post-office here. The population in 1865 was 2,139, and in 1872 was 1,590.

BAMNAULI or Bamnaul, a town in parganah Barnáwa and tahsíl Sardhana of the Meerut district, lies 19 miles from Meerut. In 1865 the population was 3,791, and in 1872 was 4,086, consisting for the most part of Játs. The present village is said to be 500 years old. There are several kheras and hillocks round about. One is called Budhi Bamnauli, founded by Rám Dás, Brahman, ancestor of some of the present inhabitants: hence the name Bamnauli. Others are the Karál, Kandhaura and Hariyáti *tilas*, regarding none of which is anything known. Tradition says the Marka hillock was erected to commemorate a terrible fight between the hostile Játs of Baraut and Doghat. The hillock covers

¹ The net revenue from the ferry was in—

Rs.		Rs.		Rs.		Rs.	
1863-64, ...	40	1865-66, ...	2,350	1867-68, ...	530	1869-70, ...	1,550
1864-65, ...	200	1866-67, ...	249	1868-69, ...	1,760	1870-71, ...	1,927

From 1866 to 1868 the ferry was held under direct management.

seven bighas of land. Of the *Dhelna tlla* nothing is known. The *Bhaironwala tlla* is so called from one Bhairon, a Jogi, who used to graze his cattle on the spot.

BARA PARTAPPUR, a villago in parganah Meerut, is distant five miles from Meerut. The population in 1872 was 719, and it possesses a police-station.

BARAUT, the chief town of the parganah of the same name in the Meerut district, is distant 27 miles from Meerut. In 1847 the population was returned at 12,450 souls, and in 1853 at 7,475. In 1865 the numbers were 8,081, and in 1872 were 7,056, of whom 5,101 were Hindús (2,396 females), and 1,955 were Musalmáns (937 females). It is said to be 1,100 years old. Baraut is a very old commercial town and contains many brick-built houses inhabited by Saraugi bankers. It lies close to the left bank of the Eastern Jumna canal, amid a perfect network of distributaries. The main canal runs nearly through the middle

The site.

of the town lands, giving off the Ráran and Shaikhupur rajbahas to the west, whilst it forms the western boundary of the town site itself. To the north and east of the site the Miránpur distributary flows until it joins the Halwári distributary on the south-east, whilst the Banli rajbaha runs south from the Baraut canal bridge to the Aláwalpur rajbaha. Owing to these complicated canal works the natural line of drainage which rises near Bijraul and passes by Bazidpur, Halwári and Báun, and is traceable to the west of the canal in Ladwári, which adjoins Surárpur, and in Niwári to the Jumna, is now impeded by the main canal near Aláwalpur, and the water backs all through, and there is much over-saturation of the soil. But, as already noted, steps are being taken to remedy these defects. Notwithstanding that the site is fairly high, the water-level in wells has risen, in January, from 28 and 30 feet to 8 and 10 feet from the surface, and with this rise fever and spleen enlargement have begun to prevail, no doubt enhanced by the excavations forming receptacles for much stagnant water which exist on all sides of the town. Entering the town on the south, by its principal way, the road is low and broken, and winds through the shoemakers' quarter to a ruined gateway, beyond which it divides into two streets. That to the left is of little importance: it has no shops and leads to the grain market (*anáj mandi*). The street to the right is the principal bazarway, and is paved with bricks, draining to the centre, and leads to the old market (*purána mandi*). The shops are not important, and two old saráis opening from the road are built of mud, but are large enough for the trade of the town. The two markets are joined by a small bazar, and westward a road connects the grain market with the old fort now occupied as a police-station. The fort is well raised, and from it a bird's-eye view of the site shows that there are many flat-roofed masonry houses in the town with mud-built out-offices embosomed in trees.

From the canal a metalled circular road winds by the north-east and south sides of the town, and near the eastern portion of this new road a new bazar has been laid out with shops and a double row of trees, and is connected with the old bazar by a short line of road. The site is very low and requires draining. There was formerly a considerable trade in ghi and safflower in Baraut. The first has declined, it is said, owing to the restrictions imposed by the municipal committee and the opening of new marts, and the latter from the decrease of the cultivation of safflower in the neighbourhood. There is a first-class police-station, post-office, and a school here. The municipality is managed by a committee of thirteen members, of whom three are official and ten are elected by the tax-payers. The income is derived from an octroi, which in 1874-75 fell at Ro. 0-10-11 per head of the population. The following statement shows the income and expenditure for four years:—

Receipts.	1870-71.	1871-72.	1872-73.	1874-75.	Expenditure.	1870-71.	1871-72.	1872-73.	1874-75.
	Rs.	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	Rs.
Opening balance, ...	8,495	3,603	6,319	3,269	Collection, ...	907	772	708	712
Class I. Food and drink.	3,762	2,906	2,689	2,939	Head-office, ...	127	132	149	36
" II. Animals for slaughter.	7	12	14	62	a. Original works,	3,852	2,470	4,500	3,431
" III. Fuel, &c.,	66	125	187	163	b. Supervision, ...	...	155	...	60
" IV. Building materials.	205	161	175	208	c. Repairs, &c.,	286	86	580	373
" V. Drugs, spices	268	62	42	76	d. Compensation,	2,000	...	...	...
" VI. Tobacco,	108	813	726	742	Police, ...	1,213	1,318	1,456	1,643
" VII. Textile fabrics.	...	205	335	338	Education, ...	325	300	43	313
" VIII. Metals, ...					Conservancy, ...	613	604	576	556
Total of octroi, ...	4,416	4,506	4,450	4,839	Charitable grants,	180	182	183	388
Tax on carriages, &c.	357	316	...	...	Gardens, ...	120	58	41	...
Rents, ...	7	50	...	3	Miscellaneous, ...	123	67	268	248
Extraordinary, ...	...	3,914	75	52					
Pounds, ...	...	40	127	262					
Fines, ...	73	34	33	90					
Total, ...	13,349	12,463	11,007	8,505	Total, ...	9,746	6,144	8,518	7,710

The following statement shows the value and character of the imports for two years. The value of the grain consumed per head of the population in 1871-72 was Rs. 6-12-10, and the quantity in 1872-73 was mds. 7-3-7 :—

Article.	Value in 1871-72.	Quantity in 1872-73.	Article.	Value in 1871-72.	Quantity in 1872-73.	Consumption per head in 1872-73.	Article.	VALUE IN		Consumption Per head in 1872-73.
								1871-72.	1872-73.	
	Rs.	Mds.		Rs.	Mds.	Mod. s. c.		Rs.	Rs.	Rs. a. p.
Wheat, ...	41,018	21,030	Gár, ...	0,642	2,062	0 14 11	Fuel, ..	1,817	1,770	...
Joár, ...	236	1,196	Khánd, ...	30,396	2,730	3 2 8	Oil, ..	4,284	3,329	0 6 7
Gram, ...	3,583	3,473	Sugar, ...	5,970	1,713	0 11 8	Drugs and spices,	4,742	0,013	0 11 6
Mung, ...	1,169	1,895	Shíra, ...	1,124	118	0 2 6	Tobacco, ...	988	675	0 1 3
Moth, ...	2,036	4,895	Pán (bundles.)	232	172	...	Building materials,	5,155	5,808	...
Maize, ...	1,063	1,953	Vegetables,	6,129	2,091	...	Cloth, ...	51,220	79,378	9 7 2
Másh, ...	3,206	1,515	Ghi, ...	7,151	557	1 6 2	Metals, ...	13,689	22,307	2 16 6
Rice ...	10,320	4,543	Fodder, ...	819	896	...	Animals, ...	377 heads	197 heads,	...
Oil-seed, ...	...	1,381								

The town is divided into three pattis ; those owned by the Játs were confiscated for rebellion in 1857 and purchased by the Afghán Ján Fishán Khán of Sardhana. The new bazar is built on one of these confiscated pattis. Baraut was the head-quarters of a tahsil transferred to Bágpát after the mutiny. It still possesses a police-station and post-office, a fair bazar, with abundant supplies, and good water. An Anglo-vernacular school was established here in 1871, but failed from want of support. There is one fine Hindu temple and a good Jain temple here. Three miles from Baraut lies the confiscated village of Bazádpur situated on a small hill. Baraut is noted for the manufacture of buckets and cauldrons of iron. The rainfall for seven years, as registered by the canal authorities, has been as follows :—1866-67, 14·7 inches ; 1867-68, 22·95 inches ; 1868-69, 20·9 inches ; 1869-70, 17·75 inches ; 1870-71, 27·9 inches ; 1871-72, 27·25 inches ; and 1872-73, 27·7 inches.

BARAUT, a parganah in tahsíl Bágpát of the Meerut district, is bounded on the north by the Muzaffarnagar district ; on the east by Barnáwa ; on the west by Chhaprauli and Kutána ; and on the south by Bágpát. According to the census of 1872 the total area then amounted to 76 square miles and 239 acres, of which 62 square miles and 308 acres were cultivated. The area assessed to Government revenue contained 76 square miles and 239 acres, of which 62 square miles and 308 acres were cultivated and 5 square miles and 407 acres were culturable.

The Eastern Jumna canal forms the western boundary of this parganah, and the Krishni Nadi the boundary on the east. Baraut resembles Chhapauli in the character of its soil and Condition of the parganah.

inhabitants. The soil consists of a rich dark loam of exceeding fertility except in seven villages along the Krishni, where there is much sand and the surface is broken up into ravines. In all the 58 estates, except fourteen, the Jâts are the proprietors, and practically the cultivators also, for not only do they cultivate all their own villages, but occupy no inconsiderable share of the land in other villages as tenants. The Baraut parganah formed a portion of Begam Sumru's estate and was first settled by Mr. Plowden in 1840, an account of which has been given in the district notice and more fully in the article SARDHANA. It is merely necessary to notice here that Mr. Forbes, at the recent settlement, found startling inequalities in the rates of assessment: while some villages paid only one-third of the net assets, others had to subsist on mere cultivating profits. These heavy rates occurred principally in the Jât villages, and were perhaps due to the fact of the Begam's dîwân being a Taga, with whom the Jâts have always been at feud. During the currency of the past settlement there have been no unrealised balances, and the transfers have only amounted to twenty per cent. of the total area. The capabilities for well irrigation are excellent, but numbers of the wells have fallen into disuse since the introduction of the canal. The Jâts, however, are beginning to construct them again in order to defend themselves against the uncertainties of the canal supply. The principal villages in this parganah not having a separate notice are the Jât village of Barnâwala, with 2,310 inhabitants; Bijrauli, which is also mainly Jât, with 2,494; Bauli, containing 3,938 inhabitants; Dhanaura, Sakrânagar (2,873); Kohrari (2,187), and Asara (2,334)—all Jât villages. The population given is that of the census of 1865. Since the last settlement, cultivation has increased twenty per cent. and irrigation has more than doubled. The following statement gives the statistics of Mr. Plowden's settlement in 1840 and Mr. Forbes' assessment in 1866:—

Period of settle- ment.	Total area.	Barren and revenue-free.	Cultivable.	CULTIVATED.			Total assess- able.	Land-re- venue.	Revenue-rate on cultivat- ed area.
				Wet.	Dry.	Total.			
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Rs.	Rs. a. p.
Former, ...	48,745	8,170	7,195	14,905	18,475	33,380	40,575	1,07,478	3 3 6
Present, ...	48,754	4,838	4,176	35,329	4,416	39,745	43,921	1,15,400	2 14 5

According to the census of 1872 parganah Baraut contained 52 inhabited villages, of which 6 had less than 200 inhabitants; 14 had between 200 and 500; 12 had between 500 and 1,000; 13 had between 1,000 and 2,000; 5 had between 2,000 and 3,000; and one had between 3,000 and 5,000. The only town containing more than 5,000 inhabitants is Baraut itself with 7,506 inhabitants.

The total population in 1872 numbered 56,240 souls (25,952 females), giving 740 to the square mile. Classified according to religion there were 46,063 Hindús, of whom 21,158 were females; 10,177 Musalmáns, amongst whom 4,794 were females. Distributing the Hindu population amongst the four great classes, the census shows 5,233 Brahmans, of whom 2,399 were females; 90 Rajpúts, including 42 females; 3,435 Baniyas (1,546 females); whilst the great mass of the population is included in "the other castes" of the census returns, which show a total of 37,305 souls, of whom 17,171 are females. The principal Brahman subdivisions found in this parganah are the Gaur (4,678), Bhát (76), Sarasút, Acháraj (198), Dakaut and Gujrátí. The Rajpúts belong to the Chauhán (30) and Tonwár clans, and the Baniyas to the Agarwál (1,346), Sarangi (1,926), and Gadariya subdivisions. Amongst the other castes the following comprise more than one thousand persons each:—Kahár (2,982), Ját (14,595), Chamar (6,825), Bhangi (2,625), and Jaláha (1,021). The following have less than one thousand members each:—Taga, Máli, Jogi, Garariya, Haj-jám, Barhai, Sonár, Lohár, Kumhár, Bharbhúnja, Gújar, Gosháin, Ahír, Bairági, Chhipi, Kalal, Nat, Khatík, Darzi, Fakír, and Orh. Musalmáns are distributed amongst Shaikhs (5,034), Sayyids (85), Mughals (90), and Patháns (320): the remainder are entered without distinction.

The occupations of the people are shown in the statistics collected at the census of 1872. From these it appears that of the male adult population (not less than fifteen years of age), 474 are employed in professional avocations, such as Government servants, priests, doctors, and the like; 1,691 in domestic service, as personal servants, water-carriers, barbers, sweepers, washermen, &c.; 1,258 in commerce, in buying, selling, keeping or lending money or goods, or the conveyance of men, animals, or goods; 3,574 in agricultural operations; 2,633 in industrial occupations, arts and mechanics, and the preparation of all classes of substances, vegetable, mineral, and animal. There were 3,418 persons returned as labourers and 869 as of no specified occupation. Taking the total population, irrespective of age or sex, the same returns give 10,143 as landholders, 13,625 as cultivators, and 32,472 as engaged in occupations unconnected with agriculture. The educational statistics, which are confessedly imperfect, show 1,483 males as able to read and write out of a total male population numbering 30,288 souls. In 1852 Baraut contained 51 estates, with an area of 46,648 acres, and in 1853 these were increased to 55 estates, with an area of 48,748 acres. The tahsíl establishment was removed from Baraut to Bágpát after the mutiny in 1857.

BARNÁWA, the chief town of the parganah of the same name in the Meerut district, is distant about 19 miles from Meerut, close to the junction of the Krishna and Hindan rivers. The population in 1865 was 2,724, and in 1872

was 2,544, living in 739 houses. The inhabitants are chiefly Hindus. The site is fairly raised on the sandy bank above the Hindan, and water in wells is found at a depth of from six to ten feet from the surface. Drinking-water is obtained from masonry wells, and is reckoned to be good and wholesome outside the town, but brackish and bad within. There are few trees near. The rain-crop is *joár* and the rabi crop is wheat, whilst rice is not grown, and there is no canal irrigation near. The high-lands on the bank of the Hindan here are composed of

sand and clay, fissured and water-worn into small
ravines. The bed of the river is broad and sandy

and is free from quicksands and swamps. Barnáwa is said to have been inhabited by Raja Ahibaran at a very early period. In fact some say that it was an outlying fortress of Hastinápur, and that the little hill to the south of the town called the Lákha Mandap was the real scene of the attempt to burn the Pándavas in the house made of wax which the Mahá-bhárata places at Varanávata or Allahabad. Another story is that the hill received the name as being the site of some austerities performed by one Lákha Pandit. The *tila* of the Lákha Mandap is about thirty acres in extent and one hundred feet high. It is rendered more imposing by the *khánkáh* with the *dargáhs* of Badr-ud-dín and Sháh Ala-ud-dín built about 500 years ago. There are numerous tombs on the hill belonging to the family of the proprietors of Shaikh-pura. An *urs* or religious fair is held annually in the hot season, called 'Mela urs Chishti Ala-ud-dín'. Doghat, noted for its leather, is in the Barnáwa parganah, as also Ranchhor, where there are two kheras. At Táwelagarhi the stables of an old Raja of Barnáwa are said to have been situated. At Sirsár is a fort in ruins said to have been built by one Jalál-ud-dín about 700 years ago, who with his Heráti countrymen settled here and eventually migrated to Shaikh-pura, where his descendants still reside. Barnáwa was the head-quarters of the Begam's tahsíl, and on her death was made subsidiary to Barant, and after that to Sardhana. The Begam's fort has lately been sold by Government: it was built about 1802 A.D., of burned brick. The owners of the land are Mughals, Afgháns, and Tagas. The Tagas were at one time sole owners. The Baniyas are all of the Jain sect. There is a public ferry here, the net revenue of which has been in 1864-65, Rs. 85; 1866-67, Rs. 480; 1868-69, Rs. 515; 1870-71, Rs. 700; 1865-66, Rs. 240; 1867-68, Rs. 500; and 1869-70, Rs. 700. The Chaukidári Act is in force in Barnáwa, and in 1873 supported a village police numbering five men of all grades at an annual cost of Rs. 288. This is met from a house-tax, which in 1872-73 yielded a revenue of Rs. 407, falling at Re. 0-2-6 per head of the population and Re. 0-8-9 per house assessed (739). The expenditure during the same year was Rs. 46.

BARNÁWA, a parganah in tahsíl Sardhana of the Meerut district, is bounded on the north by the Muzaffarnagar district, on the west by Barant, on the east

by Sardhana, and on the south by Bágpāt. According to the census of 1872 Barnáwa contained a total area of 113 square miles and 434 acres, of which 78 square miles and 412 acres were cultivated. The area assessed to Government revenue comprised 113 square miles and 434 acres, of which 78 square miles and 412 acres were cultivated and 11 square miles and 531 acres were culturable.

The Hindan flows down the eastern boundary, and the Karsuni river runs south-east, through the centre of the parganah, joining the Hindan a little below Barnáwa. The northern division, containing the large villages of Tikri, Nirpura, Daha and Doghat, is known as the 'Chaugaon' or 'tract of the four villages,' while the southern part is known as the 'Des.' The northern division has a considerable quantity of *khádir* or river-bed land. That lying along the Karsuni is somewhat sandy, though not extensive, whilst the Hindan *khádir* is not only rather sandy but in some places is injured by '*reh*.' Between the *khádir* and the uplands lies a wide belt of broken ground occupied chiefly by village sites. Above this in the uplands the soil is good and admits of the construction of *kuchcha* wells, in some parts without even a wooden lining. But the water is deep, about 45 feet, and irrigation is consequently laborious. From Dhanaura to the Bánganga a natural drainage-channel flows into the Hindan known as the Banang ravine. It seems to be widening year by year, and breaking up the land on its banks. Between Nirpura and Tikri there is a similar channel, dry in the hot season and containing a large volume of water in the rains, but not causing the same disturbance of surface as the Banang ravine. Along this depression lies the only poor sandy tract in the uplands. It passes through Nirpura, Tikri, Kheri, and Kanbar. The portion of the parganah lying to the south of the Karsuni has a similar *khádir* tract on the Hindan, a belt of broken land between it and the uplands (*bángar*) and an upland tract. The riverine land is similar to that on the north, with perhaps a little more *reh*, whilst the uplands are exceptionally good, bearing fine crops of wheat in the irrigated and gram in the unirrigated lands. Throughout the parganah, sugarcane, except in the canal-irrigated villages, is inferior to that produced in other parganahs, but cotton is extensively grown. Wheat occupies 25 per cent. of the total area, sugarcane 6, and cotton 11 per cent. The capabilities for well-sinking are good: on the edge of the lowlands the depth of water from the surface is 48 feet, while to the south and west it is 30 and 36 feet. Only fifteen villages are fully watered from the canal. Irrigation has increased from 11,047 acres at the past settlement to 26,336 acres, of which 21,194 acres are watered from wells, 4,406 from canals, and 738 from tanks. Cultivation has advanced from 38,262 acres to 50,258 acres, or 31·4 per cent.

The general history of the past and present settlements has already been given under the district notice, and an account of the Begam Sumru's

administration under Sardhana. The mass of the landowning and cultivating classes is Jâts. Kahárs have one village, Tagas two, and Musalmâns two.

Settlements. Rawas have a cluster of villages in the south, where are also a few Gújar and Hindu-Rajpút villages. The rest are Jâts. The Jâts of the northern division are of a different clan from those in the south, and the former profess to call it a grievance that the Jâts of Bamnauli should possess lands north of the Karsuni. The tenures are almost entirely *bháyáchára*, the few villages confiscated for rebellion being the only *zaminidârl* tenures in the parganah. The transfers during the currency of the old settlement were very few, amounting to only 6 per cent. by sale and 3 per cent. by mortgage, principally due to the pressure of the famine year 1860-61. Mr. J. Porter writes:—"The villages to the north of the Karsuni seem to be, as a rule, in a worse condition than those in the south. The canal is the chief cause of difference. The north suffered severely in the year of famine, and has hardly yet recovered from the effects of that calamity. The sugar plantation received a great check: loss of cattle and men and want of capital obliged the cultivators in many villages to curtail their sugar cultivation. So hard-pressed were they in some villages that they were obliged to sell their sugar presses to the canal villages of Chhaprauli in order to raise money." As noticed under Sardhana the Jâts were heavily assessed at the last settlement, and in many cases the revenue has been lowered in their villages, but the loss has been made up by enhancements elsewhere. The Government demand was raised at settlement from Rs. 1,20,795 to Rs. 1,28,950, or 6·7 per cent., though owing to increase in cultivation the incidence on the cultivated area has fallen from Rs. 3-2-4 per cultivated acre to Rs. 2-8-11.

The following statement compares in detail the statistics of the past and present settlements:—

Period of settlement.	Total area.	Barren and revenue-free.	Cultivable.	CULTIVATED.			Total assessable.	Land-revenue.	Revenue-rate on cultivated area.
				Wet.	Dry.	Total.			
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Rs.	Rs. a. p.
Former, ...	71,517	18,140	15,115	11,047	27,215	38,262	53,377	1,20,795	3 2 6
Present, { Khádir,	5,912	1,586	1,074	787	2,465	3,252	4,326	1,28,950	2 9 0
{ Bángar,	66,842	13,293	6,543	25,549	21,457	47,006	53,549		

According to the census of 1872 parganah Barnáwa contained 63 inhabited villages, of which 11 had less than 200 inhabitants; 18 had between 200 and 500; 14 had

Population.

between 500 and 1,000 ; 10 had between 1,000 and 2,000 ; 5 had between 2,000 and 3,000 ; and 4 had between 3,000 and 5,000. The only town containing more than 5,000 inhabitants is Tikri, with 5,698 inhabitants. The total population in 1872 numbered 64,997 souls (30,103 females), giving 570 to the square mile. Classified according to religion there were 55,430 Hindus, of whom 25,645 were females ; 9,567 Musalmáns, amongst whom 4,458 were females. Distributing the Hindu population amongst the four great classes, the census shows 6,047 Brahmans, of whom 2,814 were females ; 240 Rajpúts, including 107 females ; 4,192 Baniyas (1,948 females) ; whilst the great mass of the population is included in "the other castes" of the census returns, which show a total of 44,951 souls, of whom 20,776 are females. The principal Brahman subdivisions found in this parganah are the Gaur (5,667), Sarasút (31), Bhát (94), Dakaut (49), Acháraj (47), and Dasa. The Rajpúts belong to the Pundír and Tonwár clans, and the Baniyas to the Agarwál (707), Saraugi (2,977), Gindauriya (207), and Bishni (282) subdivisions. The other castes having more than one thousand members each are the Kahár (3,357), Hajjám (1,342), Ját (16,858), Chamár (7,446), Bhangí (2,702), and Gújar (1,552). Those with less than one thousand members are the Taga, Máli, Jogi, Garariya, Barhai, Sonár, Lobár, Kumhár, Bharbhúnja, Jaláha, Gosháin, Bairági, Khattri, Kalál, Ohhípi, Dhobi, Khatík, Dhanak, Orh, and Banjára. The Musalmáns are distributed amongst Shaikhs (3,018), Patháns (231), Sayyids (72), and Mughals (61) : the remainder are not distinguished according to race.

The occupations of the people are shown in the statistics collected at the census of 1872. From these it appears that of the male adult population (not less than fifteen years of age), 489 are employed in professional avocations, such as Government servants, priests, doctors, and the like ; 2,070 in domestic service, as personal servants, water-carriers, barbers, sweepers, washermen, &c. ; 1,153 in commerce, in buying, selling, keeping or lending money or goods, or the conveyance of men, animals, or goods ; 10,531 in agricultural operations ; 4,140 in industrial occupations, arts and mechanics, and the preparation of all classes of substances, vegetable, mineral, and animal. There were 2,474 persons returned as labourers and 668 as of no specified occupation. Taking the total population irrespective of age or sex, the same returns give 19,292 as landholders, 10,005 as cultivators, and 35,700 as engaged in occupations unconnected with agriculture. The educational statistics, which are confessedly imperfect, show 1,303 males as able to read and write out of a total male population numbering 34,894 souls. In 1852 Barnáwa had 80 estates, with an area of 82,304 acres, and in 1853 these were reduced to 72 estates, with an area of 72,562 acres. In 1840 Barnáwa was attached to the Baraut tahsíl, the head-quarters of which were subsequently transferred to Bágpát.

BEGAMABAD, a town in parganah Jalálabad and tahsíl Gháziabad in the Meerut district, is distant 14 miles from Meerut and 28 miles from Dehli. The population in 1865 was 2,997, and in 1872 was 2,889, occupying 645 houses. The town lies on the Dehli Grand Trunk Road, and has now a station of the Panjáb and Dehli Railway. It was founded by one Nawáb Zafar Ali, who purchased the site. The Játs bought the place from him and built a second village to the east of Zafar Ali's site, and called it Budhána. From the Játs the lands passed into the hands of a lady of the Dehli royal family, who called the place Begamabad. There is a temple here built by Ráni Bála Báí of Gwalíar seventy years ago. There are also the ruins of a fine mosque built by Nawáb Zafar Ali just outside the town. There is a road-officer's bungalow, an encamping-ground for troops, a first-class police-station, post-office, telegraph-office, school, bazar, and a good water-supply. The Chaunkidári Act is in force in Begamabad, and in 1873 supported a village police numbering six men of all grades at an annual cost of Rs. 288. This is met from a house-tax, which in 1872-73 yielded a revenue of Rs. 391, falling at Re. 0-2-2 per head of the population and Re. 0-11-7 per house assessed (539). The expenditure during the same year was Rs. 375, which was met from the income and a balance of Rs. 39 from the previous year.

BIJWÁRA or Bajwára, a town in parganah Barnáwa and tahsíl Sardhana of the Meerut district, is distant 23 miles from Meerut. In 1865 the population was 3,484, and in 1871 was 3,469, for the most part Játs. It is said to be 500 years old. This place was confiscated after the mutiny and bestowed by Government on Wiláyat Husain Khán, son of Taj-ud-dín Hasan Khán, vazír of the Nawáb of Lucknow, for his loyalty.

BINAULL, a town in parganah Barnáwa and tahsíl Sardhana of the Meerut district, lies 28 miles from Meerut. In 1865 the population was 2,172, and in 1872 was 2,257, occupying 599 houses in the Krishni-Hindan duáb. The soil around is sandy, mixed with clay enough to give it a yellowish colour. Water in wells is found at a depth of 40 feet from the surface; within the town it is brackish and outside it is sweet. To the west of the town is a large unsightly excavation reaching close up to the town and often full of stagnant water. The space between it and the town is covered with filth of all kinds. The surface drainage runs southwards towards the Krishni. The chief residents are Sarangi Baniyas. There is a second-class police-station, a post-office, and a brick-built sarai said to have been constructed some 150 years ago. The Chaunkidári Act is in force in the town, and in 1873 supported a village police numbering six men of all grades at an annual cost of Rs. 240. This is met from a house-tax, which in 1872-73 yielded a revenue of Rs. 93, falling at Re. 0-0-7 per head of the population and Re. 0-2-5 per house assessed (599). The expenditure during the same year was Rs. 46.

CHANDLAWAD, a village of parganah Kithor in the Mawána tahsíl of the Meerut district, lies 17 miles from Meerut. It is also called Mahálwa, and had in 1865 a population of 2,556 and in 1872 of 2,478, for the most part Tagas (Hindus). The dīwán (or agent) of Nain Singh built the large house called the Mahál. There is a market on Wednesdays.

CHHAPRAULI, a parganah in tahsíl Bágpát of the Meerut district, is bounded on the north by the Muzaffarnagar district, on the east by Baraut, on the west by the Jumna, and on the south by Kutána. The census of 1872 gives the total area at 58 square miles and 335 acres, of which 45 square miles and 534 acres are cultivated. The area assessed to Government revenue amounts to 58 square miles and 307 acres, of which 45 square miles and 506 acres are cultivated and four square miles and eighteen acres are culturable.

Five villages lying along the Jumna in this parganah, on the edge of the high cliff of the uplands, have a belt of sandy soils, but with this exception the soil of the entire parganah consists of a rich black loam of great fertility, which produces fine crops of wheat, tobacco and sugarcane. Both Sir H. M. Elliot in 1836 and Mr. Forbes in 1866 consider this parganah as the finest in the district, and more capable than any other of bearing a uniform average of assessment. Though wells have been in a great measure superseded by canals the well capabilities are good: the water is near the surface and *kuchoha* wells can easily be sunk. The Játs are proprietors in all the 31 villages except four, and their position amongst the cultivating body bears even a greater proportion to the whole, as the Játs not only till their own estates but hold a considerable quantity of land as tenants in other estates. Transfers amounted to only 16 per cent. of the total area, of which four per cent. was by public sale, eight by private sale, and four by mortgage. In 1829 the Játs owned all but one village. There has not been any remission of revenue during the currency of Sir H. Elliot's assessment, and the only two cases of default were at once met by a threat of transfer to other proprietors. The great success of the past settlement has no doubt in a great measure been due to its having been based on village capabilities, with a due regard both to particular circumstances affecting each village and the general results obtainable from an all-round rate on the whole parganah. There have been few changes in area beyond the addition in 1841 of the Tándá portion of the small parganah of Tándá Phugána, including twelve villages, and the transfer in 1852 of four villages to other parganahs. The result of the present assessment has been to increase the incidence of the land-revenue on the total and culturable areas, with a reduction on the cultivated area—a result due to the small margin now left for extension of cultivation. The revenue has risen from Rs. 82,801 to Rs. 89,725, giving a rate per cultivated acre at settlement of Rs. 3-1-5 as compared with Rs. 3-5-2 before.

Mr. Glyn in 1829 at first recommended this parganah for permanent settlement, but subsequently withdrew his letter and permitted a reduction. Sir H. Elliot found the parganah very much under-assessed. In the eighteen villages assessed by him, the revenue from 1829-30 to 1839-40 was fixed by Mr. Glyn at Rs. 47,915, or the last assessment (Rs. 40,636) *plus* an increase of Rs. 7,278 per annum, which was enhanced by Sir H. Elliot to Rs. 53,549 for the years 1840-41 to 1844-45, and to Rs. 60,021 for the years 1845-46 to 1853-54. The Tānda villages were at this time included in parganah Kairāna.

Settlement.

The following statement compares the past and present settlements in detail :—

Period of settlement.	Total area.	Barren and revenue-free.	Cultivable.	CULTIVATED.			Total assessable.	Land-revenue.	Revenue-rate on cultivated area.
				Wet.	Dry.	Total.			
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Rs.	Rs. a. p.
Former, ...	36,491	4,853	6,726	8,194	16,718	24,912	31,638	32,801	3 5 2
Present, ...	37,429	3,788	4,767	27,439	1,485	28,924	33,691	39,725	3 1 7

According to the census of 1872 parganah Chhaprauli contained 20 inhabited villages, of which one had less than 200 inhabitants; one had between 200 and 500; five had between 500 and 1,000; six had between 1,000 and 2,000; one had between 2,000 and 3,000; and two had between 3,000 and 5,000. The towns containing more than 5,000 inhabitants were Chhaprauli, with 5,594 inhabitants, and Kirthal, with 5,651 inhabitants. The total population in 1872 numbered 37,975 souls (17,511 females), giving 644 to the square mile. Classified according to religion there were 31,756 Hindus, of whom 14,581 were females; 6,219 Musalmāns, amongst whom 2,930 were females. Distributing the Hindu population amongst the four great classes, the census shows 3,362 Brahmans, of whom 1,512 were females; 23 Rajpūts, including 9 females; 2,462 Baniyas (1,111 females); whilst the great mass of the population is included in "the other castes" of the census returns, which show a total of 25,909 souls, of whom 11,949 are females. The principal Brahman subdivisions found in this parganah are the Gaur (3,159), Bhat, Sarasūt, Achāraj (63), and Gujrāti. The Rajpūts belong to the Chauhān clan, and the Baniyas to the Agarwāl (1,116), Śaraugi (1,186), and Bishni (141) subdivisions. The other castes showing more than one thousand persons each are the Kahār (2,401), Jāt (11,071), Chamār (4,324), and Bhangi (1,733). The following have less than one

Population.

thousand members each:—Máli, Jogi, Garariya, Hajjám, Barhai, Sonár, Lohár, Kumbár, Bharbbúnja, Jaláha, Gújar, Gosháin, Bairági, Káyath, Chhípi, Kalál, Darzi, Malláh, and Lahera. Musalmáns are distributed amongst Shaikhs (4,517), Sayyids (29), Mughals (28), and Patháns (362): the remainder are unspecified.

The occupations of the people are shown in the statistics collected at the census of 1872. From these it appears that of the male adult population (not less than fifteen years of age), 468 are employed in professional avocations, such as Government servants, priests, doctors, and the like; 1,161 in domestic service, as personal servants, water-carriers, barbers, sweepers, washer men, &c.; 3,257 in commerce, in buying, selling, keeping or lending money or goods, or the conveyance of men, animals, or goods; 5,399 in agricultural operations; 2,006 in industrial occupations, arts and mechanics, and the preparation of all classes of substances, vegetable, mineral, and animal. There was only one person returned as labourer and 555 as of no specified occupation. Taking the total population irrespective of age or sex, the same returns give 10,010 as landholders, 5,345 as cultivators, and 22,620 as engaged in occupations unconnected with agriculture. The educational statistics, which are confessedly imperfect, show 785 males as able to read and write out of a total male population numbering 20,464 souls. Ohhaprauli was in 1196 *fasl* (1789 A.D.) assigned in *jágír* to Sháh Nizám-ud-dín, comptroller of the imperial household, by whom it was held until the beginning of 1205 *fasl* (1798 A.D.), when he was dispossessed by Lakwa Dáda about the close of the same year or the beginning of 1799 A.D. Sháh Nizám-ud-dín was reinstated in the *jágír* by Sindhia and remained in possession until the rains of 1801, when the *jágír* was resumed by Mr. Perron, and from that time formed a portion of the revenue-paying lands. Kuri Dhárki was held in *jágír* by the Nawáb of Jhajhar until 1835-36, when it lapsed to Government. The principal villages not separately noticed are Rataura, Ramala, Súb and Júb, all chiefly inhabited by Játs.

CHHAPRAULI, a large village in the parganah of the same name in the Meerut district, is distant .5 miles from Meerut. In 1847 the population numbered 13,878 souls; in 1853 the numbers are not recorded, but in 1865 they were 5,266, and in 1872 there were 5,594 inhabitants, of whom 4,691 were Hindús (2,177 females) and 903 were Musalmáns (440 females). The great number in 1847 is due to the inclusion of outlying hamlets in the town census. The village contains about 1,200 houses, all but two of which are mud-built. There are five pattís or subdivisions—Dhaknausya, Chandoiyan, Dhádán Tílwára, Bhaúla, and Jagmalán. The bazar consists of two narrow unmetalled streets, which cross each other at right angles to form a *chauk*. There is also a small row of shops called the Náya Bazar, and a small market-place and sarái. The site is fairly

Site.

raised, the centre is high, the natural drainage is good, and there are few unsightly excavations around the site. The water in wells is found at a depth of 15 feet from the surface, but owing to the good drainage the public health is not affected. There is a large community of Saraugi Baniyas here, occupying about sixty houses and possessing a fine temple. The Jāts are said to have colonised this place some 1,100 years ago, and to have given it the present name because they lived in *chhapars* or straw huts (!) About 150 years ago they received amongst them the Jāts of Mīrpur, who had been almost ruined by the incursions of the Sikhs, and since then the town has increased in numbers. It is purely a large agricultural village, without trade or manufactures. A market is held on Tuesdays, and there is a station of police and a post-office here.

DABATHWA or Dabathuwa, a town in parganah Sardhana of the Meerut district, is nine miles from Meerut. The population in 1865 was 2,446, and in 1872 was 2,338. It is said to have been founded by some Sayyids more than 600 years ago. There is a considerable sugar trade carried on by the Mahājans of this village, and large quantities of sugar are refined here. There are two kheras close by Dabathwa. The khera Chauhān was peopled with Chauhāns by the Sayyids, but the colony went to ruin 400 years ago. The Gújars then lived there, and after them the Jāts, who appropriated both the small villages whose site is now marked by the khera and the parent village as well. They are the zamīndārs to this day. The second khera is a small one and is known simply as the khera.

DADRI, a village in parganah Meerut of the Meerut district, is distant 16 miles from the civil station. It was formerly one of the residences of the Gújar chief, Nain Singh, through the site of whose fort the railway now runs. The rajbaha near the site is said to impede the local drainage and to affect injuriously the public health. The population in 1872 numbered 1,326 souls, chiefly Gújars. There is a police-station here.

DĀHA, a large village in parganah Barnāwa and tahsíl Sardhana of the Meerut district, is distant a little more than 23 miles from Meerut. In 1865 the population was 3,351, and in 1872 was 3,136. It is said to be 700 years old. The Jāts of this village have always been a troublesome and aggressive race, and are credited with many acts of violence, among which was the destruction of Tālibpur some two centuries ago. Dāha was confiscated after the mutiny and is now held by direct management. It has a second-class police-station and a district post-office.

DĀSNA, the principal town of the parganah of the same name in the Meerut district, is situated 23 miles from Meerut. The population in 1852 was 4,302, and in 1865 was 4,165. In 1872 there were 5,605 inhabitants, of whom 2,564 were Hindus (1,210 females) and 3,041 were Musalmāns (1,555 females),

occupying 1,160 houses. A mile to the east flows the Ganges canal, and a channel from the right Dásna rajbaha flows past the village site. The place was founded by Raja Salársi, a Rajpút, in the time of Mahmúd Ghaznavi. It was ravaged by Ahmad Sháh Abdali in his great irruption in 1760, when he pulled down the large fort. In the muharram an *urs* or religious fair is held at the town in honour of Sheikh Alladiya Makhdúm Sháh Wiláyat. At the Mandir Devi, too, there is a small bi-annual Hindu fair. Mr. Michel's indigo factory is established at Masúri in the neighbourhood of this town. The enormous quantity of indigo grown in this parganah for the supply of this, Mr. Skinner's, and other factories is illustrative of the trading spirit that has sprung up in these Provinces since the advent of the British Government. There is a second-class police-station and a post-office here. The Chaunkidári Act is in force in Dásna, and in 1873 supported a village police numbering twelve men of all grades at an annual cost of Rs. 576. This is met from a house-tax, which in 1872 yielded a revenue of Rs. 455, falling at Re. 0-1-3 per head of the population and Re. 0-7-5 per house assessed (982). The expenditure during the same year was Rs. 499, which was met from the income and a balance of Rs. 49 from the previous year.

DÁSNA, a parganah in tahsíl Gháziabad or Gháziuddínnagar, in the Meerut district, is bounded on the east by Hápur, on the north by Jalálabad, on the west by Loni, and on the south by the Bulandshahr district. The census statistics of 1872 gives the total area as 137 square miles and 167 acres, of which 102 square miles and 467 acres were cultivated. The area assessed to Government revenue amounted to 130 square miles and 414 acres, of which 100 square miles and 209 acres were cultivated, and of the remainder 10 square miles and 86 acres are returned as unculturable.

The soils in this parganah consist for the most part of a firm clay admirably adapted for *kuchcha* wells and yielding fine crops of wheat when irrigated. The Ganges canal runs through the whole parganah, and there are few parts of the district that have improved so much during the last thirty years. The irrigated area has increased from 26,454 acres to 46,174 acres, of which 22,943 acres are watered from the canal, 22,608 acres from wells, and 623 acres from tanks. The canal has driven out well-irrigation to the extent of 3,846 acres. Cultivation has increased from 47,943 acres to 61,932 acres, and there are still 15,241 acres of good soil under *dhák* jungle awaiting the plough. The general history connected with the past and present settlements and other matters pertaining to the economical history of the parganah have been sufficiently indicated under the district notice. Transfers in this parganah have been frequent, but are mostly due to confiscations for rebellion. Mr. Forbes writes:—"The cause for the rebellion of the Rajpúts is difficult to account for, certainly it was not the result

of heavy assessment and indigence of circumstances. In one or two instances it is well known the people seized the opportunity of fighting out old feuds and rose against their neighbours rather than against the Government, and in one case it is much to be feared the proprietors paid with their estates for the evil deeds of the non-proprietors of other castes." The Rajpúts strongly predominate throughout the parganah and are better cultivators here than elsewhere. The farming is of the highest order, and the richest crops, particularly cotton and wheat, are extensively grown. Mr. Skinner has a large indigo factory at Dehra.

Dásna in 1807 formed the head-quarters of a tahsil including Dásna and Shikárpur. The following statement compares the statistics of the past and present settlement:—

Period of settlement.	Total area.	Barren and revenue-free.	Cultivable.	CULTIVATED.			Total assessable.	Land-revenue.	Revenue-rate on cultivated area.
				Wet.	Dry.	Total.			
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Rs.	Rs. a p.
Former,	86,663	12,183	26,537	26,454	21,489	47,943	74,480	97,163	2 0 5
Present,	87,848	10,675	15,241	46,174	15,758	61,932	77,173	1,23,050	1 15 9

According to the census of 1872 parganah Dásna contained 104 inhabited villages, of which 20 had less than 200 inhabitants; 38 between 200 and 500; 22 had between 500 and 1,000; 15 had between 1,000 and 2,000; 5 had between 2,000 and 3,000; and two had been between 3,000 and 5,000. The towns containing more than 5,000 inhabitants are Dásna with 5,605 and Pilkhua with 6,239. The total population in 1872 numbered 81,332 souls (37,785 females), giving 594 to the square mile. Classified according to religion there were 59,082 Hindus, of whom 27,026 were females; 22,163 Musalmáns, amongst whom 10,723 were females; and 88 Christians. Distributing the Hindu population amongst the four great classes, the census shows 7,019 Brahmans, of whom 3,269 were females; 12,501 Rajpúts, including 5,305 females; 4,094 Baniyas (1,812 females); whilst the great mass of the population is included in "the other castes" of the census returns, which show a total of 35,468 souls, of whom 16,640 are females. The principal Brahman subdivisions found in this parganah are the Gaur (6,466), Bhát (206), Sarasút, Acháraj, Dasa, and Pallewál. The Rajpúts belong to the Tonwár (3,437), Chauhán (365), Badgújar, Dhangar, Gahlot, Pundír, Bisen, and Janghára clans; the Baniyas to the Agarwál (3,921), Sarangi and Bishni subdivisions. The other castes numbering more than

one thousand persons each are the Koli (2,486), Garariya (1,335), Kahár (1,351), Hajjám (1,204), Ját (3,662), Kumhár (1,153), Chamár (11,702), Bhangí (3,175), Gújar (1,330), and Ahír (1,531). Those having less than one thousand members are the Taga, Máli, Jogi, Barhai, Sonár, Lohár, Bharbhúnja, Dhúna, Gosháin, Bairági, Khattri, Káyath, Chhipi, Kalál, Dhobi, Teli, Saisi, Kanjar, Rahti, Agariya, Orh, Mowáti, Chai, Ráj, and Ahar. The Musalmáns are distributed amongst Shaikhs (7,609), Sayyids (406), Mughals (194), and Patháns (587) : the remainder are undistinguished.

The census statistics show that of the male adult population (not less than fifteen years of age), 352 were employed in professions, 3,097 in domestic service, 1,646 in commerce, 12,939 in cultivating the soil, 2,710 in the mechanical arts and manufactures, while 4,029 were returned as labourers and 837 of no specified occupation. Of the total population the same enumeration gives 16,440 as landholders, 21,734 as cultivators, and 43,158 as engaged in occupations unconnected with agriculture. The educational statistics show only 1,083 males out of a total male population of 43,458 souls as able to read and write. In 1852 there were 145 estates in parganah Dásna, having an area of 109,454 acres ; in 1853 these were reduced to 110, with an area of 86,654 acres.

DATERI, a station of the Great Trigonometrical Survey, is situated in parganah Jalálabad of the Meerut district, in lat. $28^{\circ}-44'-5''$ and long. $77^{\circ}-41'-24''$ at an elevation of 767·0 feet above the level of the sea. The upper markstone of the survey is situated about half a mile south-east of the village of that name, 4·6 miles south-east of Kalehina, 5·8 miles north-east of Náhal, and about 1·5 miles north-north-west of Pilkhua Girdharpur.

DAURÁLA, a village on the Saháranpur road, in parganah Meerut of the Meerut district, is distant nine miles north from Meerut. The population in 1872 was 3,373. It is situated in a highly cultivated country, watered in every direction by the Ganges canal. There is an encamping-ground for troops, and supplies and water are obtainable. There is a first-class police-station here.

DHAULARI or Dholri, sometimes known as Rasúlpur Dhaulári, a village on the Hindan in parganah Meerut of the Meerut district, lies in lat. $28^{\circ}-55'-14''$ and long. $77^{\circ}-31'-15''$ at an elevation of 780·8 feet above the level of the sea. The upper markstone of the Great Trigonometrical Survey station is situated on slightly elevated ground near the village. This height was deduced trigonometrically.

DHAULANA, a town in parganah Dásna, in tahsíl Gháziabad of the Meerut district, is situated some distance to the left of the Ganges canal, 25 miles from Meerut. In 1865 the population was 3,667, and in 1872 was 3,175, composed mostly of Hindu Rajpúts, occupying 701 houses. There is a fine temple here dedicated to Málan or Malandi Devi. At one time the people of Dhaulána used

to worship at Nagla Káshi, but about thirty years ago the hostile Rajpúts of these two villages fought at the fair held in honour of the *sati* Malandi, after which they built the present temple. There is a post-office and a second-class police-station. The people still remember its sack by the Sikhs in 1786. The Chaukidári Act is in force is Dhaulána, and in 1873 supported a village police numbering seven men of all grades at an annual cost of Rs. 336. This is met from a house-tax, which in 1872-73 yielded a revenue of Rs. 345, falling at Re. 0-1-7 per head of the population and Re. 0 7-10 per house assessed (700). The expenditure during the same year was Rs. 362, which was met from the income and balance of Rs. 37 from the previous year.

DOHAI, a village in parganah Jalálabad, is distant 21·5 miles from Meerut. The population in 1872 numbered 1,491 souls. There is a police-station here.

FARIDNAGAR, a town in parganah Jalálabad and tahsíl of Gháziabad in the Meerut district, is distant 16 miles from Meerut. The population in 1865 was 4,525, and in 1871 was 4,941, for the most part Bilúches and Rajpúts. The village was founded by Nawáb Faridun Khán in the reign of Akbar, who had the neighbouring lands cleared of jungle. The place is one mile off the Hápur and Begamabad road.

FARUKENAGAR, a village in parganah Loni of the Meerut district, 14 miles north-east of Dehli, on the Meerut and Dehli road, is situated on the right bank of the Hindan, which is here crossed by a ford from two to two and a half feet deep. The country around is open and cultivated, and the roads are good. The Chaukidári Act is in force in Farukhnagar, and in 1873 supported a village police numbering three men of all grades at an annual cost of Rs. 144. This is met from a house-tax, which in 1872-73 yielded a revenue of Rs. 330, falling at Re. 0-3-5 per head of the population and Re. 1-2-1 per house assessed (291). The expenditure during the same year was Rs. 278, which was met from the income and a balance of Rs. 29 from the previous year.

GARHMUKTESAR, a town in the parganah of the same name in the Meerut district, is situated on the right bank of the Ganges in lat. 28°-47'-10" and long. 78°-8'-30", at a distance of 26 miles from Meerut. According to the census of 1847 it had a population numbering 7,168 souls; in 1852 the population was 8,781, and in 1865 it amounted to 8,761. In 1872 the population numbered 7,962 souls, of whom 5,401 were Hindús (2,489 females) and 2,561 were Musalmáns (1,203 females). The town stands on the high cliff of the right bank of the Ganges, four miles below its junction with the Búrhi Ganga, and contains 2,458 houses, many of which are brick-built and in good repair. The principal bazar, which is also the principal road, runs from west to east, and dips down suddenly as it approaches the khádir of the Ganges. Beginning on the west there are four large saráis for travellers, and beyond this an open space used as a grain market.

The site,

Next commences the regular bazar lined with good shops, which towards the edge of the cliff are two-storeyed and brick built. This road is metalled and paved with bricks in places, and on its descent to the Ganges has been carefully sloped away and a good brick-on edge causeway with a gentle gradient constructed for the convenience of cart traffic. The houses on either side of the principal street are closely packed together and the lanes are narrow and unmetalled. The drainage throughout is perfect, the rainfall at once running off to the Ganges. A new dispensary has been built between the Brahman and Musalmán quarters, and a new police-station to the north of the town. The site is sandy, but below the sand there is a good stratum of firm soil which admits of wells being built. The drinking-water is good and is found at a depth of from 30 to 50 feet from the surface. As might be expected, there are a great number of Brahmans resident here who are popularly supposed to occupy one-half the town, but there is also a considerable Musalmán element, the head of whom was hanged for rebellion in the mutiny. The town is an agricultural one, and there is little trade except in timber and bambus, which are rafted down the Ganges from the Dún and Garhwál forests. The Chaukidári Act is in force in Garhmuktesar, and in 1873 supported a village police numbering 27 men of all grades at an annual cost of Rs. 1,686. This is met from a house-tax, which in 1872-73 yielded a revenue of Rs. 3,181, falling at Re. 0-3-9 per head of the population and Re. 1-2-3 per house assessed (1,628). The expenditure during the same year was Rs. 4,861, which was met from the income and a balance of Rs. 4,528 from the previous year.

The place is said to have been a *muhalla* of Hastinápuri, and frequent mention is made of it in the Bháagavat Purána and in the Mahábhárata. There was a very ancient fort here, which was repaired by Mír Bháwan, a Marhatta leader, and was in such preservation at the early period of British rule that only a very small expenditure was necessary to fit the place for a *tahsíl*. Garhmuktesar is occasionally mentioned by the Persian historians as a garrison town. The name is derived from the great temple of Mukteswara Mahádeo, dedicated to the goddess Ganga. There are four principal temples,—two high, placed on the cliff, and two lower down—in all of which Ganga, formed of white marble and clothed in brocade, is worshipped. The one near the Meerut road contains the sacred well, with the waters of which every one must be washed before his sins are cleansed. Near this temple there are no less than eighty *sati* pillars, marking the spots where wives, in times not so far removed, gave up their lives on the funeral pyre of their departed husbands. The great fair is held on the day of the full moon of Kárttik, when some 200,000 pilgrims congregate here from all parts of the country. Double this number assemble on the sixth and twelfth years, and even greater numbers each fortieth year. Fairs are also held on the Somwáti

Amawás, or the last day of the lunar month when it falls on a Monday; on the full moon of Baisákh; on the ninth day of the light fortnight of Jeth, and on any other day when certain planets are in conjunction with certain others or with certain points of the zodiac. There is a ferry¹ in the rains and a bridge-of-boats for the remainder of the year joining the Meerut and Moradabad metalled roads. There is a first-class police-station and a travellers' bungalow near the town, and an encamping-ground for troops. Formerly both banks of the river for several miles in width were overgrown with a thick grassy jungle and were much infested with tigers, but now the jungle has entirely disappeared owing to the increase of cultivation.

GARHMUKTESAR, a parganah in tahsil Hápur of the Meerut district, is situated on the right bank of the Ganges, and is bounded on the south by Púth, on the west by Hápur, and on the north by Kithor. According to the census of 1872 parganah Garhmuktesar had, then, an area of 105 square miles and 122 acres, of which 69 square miles and 107 acres were cultivated. The area assessed to Government revenue amounted to 98 square miles and 388 acres, of which 64 square miles and 9 acres were cultivated; of the remainder, 15 square miles and 297 acres were returned as unculturable.

The parganah is small, and the soil is poor owing to the presence of sandy ridges or dunes which traverse this parganah in many places, so that some villages are situated 'amid prairies of rolling sand.' Although bordering on the Ganges the cultivable land in the river bed is not considerable, but the soils close to the high banks of the river make up for smallness of area in fertility, producing fine crops of rice and sugarcane. In this manner estates with a mixed upland and lowland area make up their revenue. The portions of the upland bordering the *khádír* are, as a rule, cut up into ravines, sandy and unirrigated, with only patches of cultivation entirely dependant upon the winter rains. The general history of the past and present settlements of this parganah has been given under the district notice, as well as of rents and other matters pertaining to its economical history. Irrigation is conducted almost entirely from wells, and though needing canal-irrigation more than any other parganah it receives least. Out of 110 estates the canal reaches only 34 and irrigates only about one-fourth of their total area. It would be among the first parganahs in the district to suffer in times of drought. Still irrigation has trebled since the last settlement. There

¹ The net revenue of this ferry has been—

	Rs.		Rs.		Rs.
1862-63	... 5,329	1865-66	... 11,280	1868-69	... 11,480
1863-64	... 9,353	1866-67	... 9,857	1869-70	... 17,819
1864-65	... 11,280	1867-68	... 12,688	1870-71	... 21,080

and in 1871-72 was Rs. 23,680. The ferry was held under direct management in 1862-63 and in 1866-67.

are at present 308 *pukka* and 304 *kuchcha* wells, working 544 *laos*, in the estates assessed with revenue, but 157 of these are used for drinking purposes alone.

The capabilities for well-sinking, owing to the sandy nature of the soil, are not good except in a few places, and here every advantage is taken of the circumstance. The cultivation is on the whole good, and in some villages as high as is to be found in any other parganah in the district. Transfers

have taken place during the currency of the past settlement, affecting 29 per cent. of the total area.

Of these 12,208 acres were by private sale, 2,843 acres by auction sale, and 3,531 acres by mortgage. Mr. Forbes is inclined to eliminate private sales from this account before drawing unfavourable conclusions, as this class of sales, at least in this parganah, are chiefly due to the great increase in the value of land. "In the large estate of Garhmuktesar the land is of very little value for agricultural purposes, yet the sanctity of the neighbourhood has given the ravines and sandy *nałas* about the town a fictitious value. Bankers, tradesmen, and men of all classes from all the country round are now eagerly buying up small plots, enclosing, levelling, sinking wells, planting gardens, and in some instances building small summer-houses in order to have a footing on such holy ground." The Tagas and Rajpúts, who are the largest proprietors, have also sold and bought most, whilst the Játis sold only 633 acres and purchased 2,538 acres. There are 101 revenue-paying and nine revenue-free estates in the parganah. The Tagas hold 22 and have shares in 13 others; the Játis own 14 and have shares in 13 others; Rajpúts hold 11 whole estates and portions of 18, and the remainder are held by Afgháns, Gújars, Brahmans, Shaikhs, Sayyids and others.

The following statement shows the statistics of the past and present settlements :—

Period of settlement.	Total area.	Barren and revenue-free.	Cultivable.	CULTIVATED.			Total assessable.	Land-revenue.	Revenue-rate on cultivated area.
				Wet.	Dry.	Total.			
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Rs.	Re. a p.
Former, ...	58,390	9,068	19,739	3,823	25,760	29,583	49,322	48,096	1 10 0
Present, ...	67,322	10,526	12,529	10,919	33,348	44,267	56,796	58,880	1 5 3

According to the census of 1872, parganah Garhmuktesar contained 80 inhabited villages, of which 25 had less than 200 inhabitants; 27 had between 200 and 500; 19 had between 500 and 1,000; 6 had between 1,000 and 2,000; 2 had between 2,000

and 3,000. The only town containing more than 5,000 inhabitants is Garhmuktesar itself, with 7,962 inhabitants. The total population in 1872 numbered 46,913 souls (21,949 females), giving 447 to the square mile. Classified according to religion there were 33,043 Hindus, of whom 15,326 were females; 13,870 Musalmáns, amongst whom 6,623 were females. Distributing the Hindu population amongst the four great classes, the census shows 3,538 Brahmans, of whom 1,679 were females; 1,718 Rajpúts, including 746 females; 1,717 Baniyas (787 females); whilst the great mass of the population is included in "the other castes" of the census returns, which show a total of 26,070 souls, of whom 12,114 are females. The principal Brahman subdivisions found in this parganah are the Gaur (2,881), Sarasút (259), Bhat (57), Acháraj (79), Sanádh and Nagar. Rajpúts belong to the Chauhán (1,215), Tonwár, Panwár, Jádón and Dor (60) clans, and the Baniyas to the Agarwál (1,451) and Mahesri subdivisions. The other castes having more than one thousand members each are the Taga (1,807), Ját (2,907), Chamár (8,959), Bhangí (1,356), and Gújar (2,203). Those having less than one thousand members are the Múli, Jogi, Koli, Garariya, Kahár, Hajjám, Barhai, Sonár, Kumhár, Bharbhúnja, Dhúna, Gosháin, Ahír, Bairági, Káyath, Kalál, Lodha, Khatík, Fakír, Ghosi, Khagi, and Ahar. Musalmáns are distributed amongst Shaikhs (12,205), Patháns (309), Sayyids (76), and Mughals (33): the remainder are unspecified.

The census returns of 1872 give the occupations of the people also. They show that of the male adult population (not less than fifteen years of age), 555 were engaged in professional employments; 1,455 were employed in domestic service; 3,382 in commerce; 7,359 in cultivating the soil; 2,314 in the mechanical arts and manufactures, and 450 were returned as of no specified occupation. Taking the total population of the parganah, the same inquiry sets down 4,088 as landowners, 16,795 as cultivators, and 26,030 as pursuing occupations unconnected with agriculturo. The educational statistics are imperfect, showing only 1,064 as able to read and write out of a male population numbering 24,964 souls. Up to 1819 Garhmuktesar was the head of a tahsíl which in that year was transferred to Hápur and included Hápur, Ajrára-Saráwa, Bhojpur, Jalál-abad, and Garhmuktesar. There were 118 estates in 1852, reduced by transfers to 84 in 1853.

GHÁZIABAD or Gháziuddínnagar, a flourishing town in parganah Loni and tahsíl Gháziabad in the Meerut district, is situated in lat. 28° -39' -55" north, and long. 77° -28' -10" east, on the line of railway 28 miles from Meerut. In 1847 the population was 5,112; in 1853 there is no mention of Gháziabad amongst the towns having more than 5,000 inhabitants. In 1865 the numbers were 6,477, and in 1872 there were 7,365 inhabitants, of whom 4,762 were Hindus

(2,259 females) and 2,598 were Musalmáns (1,178 females) and 5 Christians. The town lies at a short distance from the left bank of the Hindan river, which is navigable from this place to the Jumna, a distance of 30 miles, for small boats and rafts. The site comprises portions of the villages of Játwara, Kaila, and

The site.

Bhaunja. It at present comprises an oblong space about 1,000 yards long by 500 yards broad, bordered by brick walls and divided lengthwise from east to west by a main street, and in breadth from north to south by a second street. At the extremity of each of these ways is a gate-way. The first street is called the Purána Bazar, and is lined on each side by shops, some of which are two-storeyed; the second street is called the Náya Bazar, and both are broad, metalled, and drained. The shops are good, many are brick-built, and all are in good repair. The houses within this space and between the streets are closely packed together and divided by narrow, unmade lanes with some appearance of regularity. To the north-east is the brick-built sarái of the founder, Gházi-ud-dín. In 1872 the site had an area of 47 acres 2 roods 10 poles, giving 153 persons to the square acre, and owing to the growth of trade it is intended to enlarge the town. The walls to the south-west are to be thrown down, and bazars will be built on a space of 58 bighas towards the Grand Trunk Road, as the requirements of the town may demand. Lines of trees have already been planted there, and this is the site of the new tahsílí and new school-house. To the east, the mud-built village of Játwara kalán contains the cultivators of the Gháziabad lands, and here there is a fine tank with some good trees on its banks. At Kaila there is a second tank built by one Kámta Rám, Gosháin, about one hundred years ago; the *kothi* or hut of the builder is on the bank of the tank. A fair road leads to the great sarái

The saráis.

from the Purána Bazar. The inner space of the sarái is capacious, and is surrounded by 120 masonry-built rooms adorned with pointed-arch fronts and affording good accommodation for travellers. The centre set of arches on each side are smaller and closer, and belong to separate places, set apart formerly for travellers of the better description. One of these buildings is now used as a police-station and another as a municipal hall. There is one mosque here and five others elsewhere in the town. There is one good temple called Mandir Dudheswarnáth. It is said that, some 200 years ago, a Brahman happened to pass by this spot and saw a cow dig a small hole in the earth and let her milk flow into it. On hearing the wonderful circumstance the Hindús built a temple over the spot and dedicated it to Dudheswarnáth. Before this the place was a jungle. The excavations near the brick-fields, the improvement of the butchers' quarter, and the repair of the wall and gates are all matters engaging the attention of the local authorities. The well water of the town is remarkably good, and water is found at a depth of from 40 to 50 feet from the surface. There is no canal irrigation near, still autumn fever

is prevalent. Though the principal inhabitants are Baniyas and Mahájans, there is no fixed market day. The tahsil was removed here in 1859, and owing to the opening of the East Indian line and the Dehli and Panjáb line, the place is yearly rising in importance. The East Indian Railway station was built in 1865, and the Panjáb line was opened in 1869. Since then numerous railway barracks, bungalows, and houses for native employés have sprung up.

The affairs of the municipality are managed by a committee of nine members, of whom three are official, five are elected by the tax-payers, and one is nominated by the Railway Company. The income is derived from an octroi, which in 1874-75, fell at Re. 1-4-0 per head of the population. The following statement shows the income and expenditure for four years :—

Receipts.	1870-71.	1871-72.	1872-73.	1874-75.	Expenditure.	1870-71.	1871-72.	1872-73.	1874-75.
	Rs.	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	Rs.
Opening balance, ...	1,142	206	1,619	1,976	Collection, ...	1,059	1,227	1,238	670
Class I.—Food & drink,	5,361	5,684	3,317	1,502	Head-office, ...	433	810	186	60
„ II.—Animals for slaughter.	70	356	701	547	Original works,	296	101	2,686	2,533
„ III.—Fuel, &c., ...	60	193	640	659	Purchase of land,	2,078	152	...	...
„ IV.—Building materials.	100	280	221	216	Repairs, &c., ...	57	607	110	1,000
„ V.—Drugs, spices, &c.	90	105	101	98	Police, ...	2,203	2,398	1,727	1,724
„ VI.—Tobacco, ...	42	68	58	38	Education, ...	...	...	...	122
„ VII.—Textile fabrics.	...	...	714	395	Conservancy, ...	500	476	558	840
„ VIII.—Metals, ...	...	...	24	28	Charitable grants,	340	195	292	70
Total of octroi, ...	5,723	6,686	5,776	3,483	Watering roads,	448	424	384	288
Rents, ...	681	597	188	37	Gardens, ...	276	22	14	15
Tolls on carts, ...	...	...	1,338	2,185	Miscellaneous, ..	262	167	190	140
Extraordinary, ...	100	24	85	...	Lighting, ...	...	118	284	395
Fines, ...	21	23	...	10					
Pounds, ...	176	227	216	136					
Miscellaneous, ...	316	50	326	295					
Total, ...	8,159	7,816	9,610	8,122	Total, ...	7,953	6,197	7,730	7,857

The following statement shows the character and value of the imports and the consumption per head of the population : —

Articles.	Value imported in 1871-72.	Imports in 1872-73.		Consumption per head in		Articles.	Value imported in 1871-72.	Imports in 1873-74.		Consumption per head in	
		Value.	Quantity.	1871-72.	1872-73.			Value.	Quantity.	1871-72.	1872-73.
	Rts.	Rs.	Mds.	Rs. a p.	Rs. a p.		Rs.	Rs.	Mds.	Rs. a p.	Rs. a p.
Grain, ...	2,20,330	90,609	60,400	22 0 8	11 1	Pán (bundles)	519	395	790	...	...
Sugar, ...	43,885	58,209	14,574	4 6 3	5 9 3	Milk, ...	1,531	1,141	571	...	...
Ghi, ...	16,912	15,537	615	1 11 1	1 8 0	Metals, ...	...	1,658	...	...	0 2 6
Vegetables	2,640	2,721	2,721	...	...	Buildi n g materials.	9,944	874	...	...	...
Fodder, ...	3,995	1,327	1,327	...	...	Spices, &c.	6,716	6,367	...	...	...
Oil and oil- seeds.	29,950	27,279	8,020	2 12 8	2 3 9	Tobacco,...	2,167	374	...	0 3 5	...
Fruit, ...	2,422	1,016	1,525	...	...	Cloth, ...	...	47,788	...	...	4 9 2

The consumption of grain in weight during 1872-73 amounted to 5 maunds 33 sers 1 chhaták per head. A toll on carts laden with grain has now been substituted for the duty on grain itself. Since the opening of the municipality many local improvements have been effected, but much still remains to be accomplished. The streets have been widened, metalled and drained, conservancy has been placed on a stable footing, and educational institutions have been established in connexion with the municipality. The following statement shows the selling price of wheat at Gháziabad from 1831 to 1870 :—

Year.	Sers.	Year.	Sers.	Year.	Sers.	Year.	Sers.
1831, ...	36	1841, ...	27	1851, ...	42	1861, ...	14
1832, ...	36	1842, ...	28	1852, ...	32	1862, ...	27
1833, ...	20	1843, ...	34	1853, ...	27	1863, ...	32
1834, ...	32	1844, ...	33	1854, ...	35	1864, ...	25
1835, ...	40	1845, ...	36	1855, ...	47	1865, ...	19
1836, ...	42	1846, ...	31	1856, ...	38	1866, ...	20
1837, ...	18	1847, ...	33	1857, ...	37	1867, ...	21
1838, ...	12	1848, ...	21	1858, ...	30	1868, ...	23
1839, ...	20	1849, ...	35	1859, ...	32	1869, ...	13
1840, ...	21	1850, ...	44	1860, ...	17	1870, ...	15

Gháziabad was founded in 1740 by the Vazír Gházi-ud-dín, son of Asaf Jáh and brother of Salábat Jang, ruler of the Dakhin, some account of whom is given in the introduction. It

History.

was known as Gháziuddínnagar until the opening of the railway, when the name was shortened to Gháziabad. It was here that, in May 1857, the small British force from Meerut successfully encountered the Dehli rebels who had come out to oppose them. Gháziabad lies on the Grand Trunk Road between Aligarh and Dehli, distant 11 miles from Dádri and $14\frac{1}{2}$ miles from Dehli. The road in both directions is metalled and bridged. From Dádri, in the Gújar country, the road passes by Dhúm, 2 miles; Badalpur Milk, 4 miles; Chhappraula, 6 miles. From Gháziabad to Dehli, the Hindan is crossed by a bridge at $1\frac{1}{2}$ miles, Shahdara is passed at $8\frac{1}{2}$ miles, and the Jumna is crossed by the railway bridge at $10\frac{1}{2}$ miles. The Grand Trunk Road enters Dehli by the Calcutta gate, passes down the Chándni Chauk, and leaves it by the Láhor gate for the Panjab.

GHÁZIABAD, a tahsíl of the Meerut district, comprises the parganahs of Dásna, Jalálabad, and Loni in the south-west of the district. According to the census of 1872 the total area then comprised 494 square miles and 252 acres, of which 353 square miles and 225 acres were cultivated. The area assessed to Government revenue contained 480 square miles and 376 acres, of which 347 square miles and 285 acres were cultivated, 79 square miles and 323 acres were culturable, and 53 square miles and 408 acres were barren. The land-revenue during the same year amounted to Rs. 3,95,326 (or with cesses Rs. 4,30,896), falling at the rate of Re. 1-4-0 on the total area per acre, Re. 1-4-7 on the area assessed to Government revenue, and Re. 1-12-0 on the cultivated acre. The population during the same year numbered 253,037 souls, of whom 116,243 were females. There were 512 souls to each square mile, living in 356 villages. The same statistics show 15 persons as insane, 17 as idiots, 34 as deaf and dumb, 650 blind, and 74 lepers. All other subjects are noticed in the account of the district or separately under each parganah.

GOHRA or Gaura, also known as Gauha, a village in parganah Hápur and tahsíl of the same name in the Meerut district, is distant about 15 miles from Meerut. In 1865 the population was 1,426, and in 1872 was 1,753. It was once the head of a tappa and a place of considerable importance. Tradition says that the cattle of the Hastinápur Rajas were housed here. Near Gohra a khera or mound is said to mark the site of an ancient village, Bijayapur, under which name it is known to this day.

HÁPUR, a large town in the parganah of the same name in the Meerut district, is distant 18 miles from Meerut to the south. The population in 1865 numbered 14,294, making it the second city in the district. In 1872 the number was 14,544, of whom 8,696 were Hindus (4,036 females) and 5,848 were Musalmáns (2,907 females), including one Christian. There are 1,903 enclosures in the town, of which 1,147 are occupied by Hindus. The

enclosures contain 3,390 houses, of which 665, built by skilled labour, and 1,402 mud huts are occupied by Hindus, and 190 masonry dwellings and 1,133 mud huts by Musalmáns. There are 34 muhallas in the town. Dividing the population according to their callings, we have 298 registered as landowners, 1,053 as cultivators, and 13,192 as following occupations unconnected with agriculture. 669 Hindu males, 239 Musalmán males, and four Hindu females out of the whole population are shown as able to read and write. Taking the male population not less than fifteen years of age (3,157 Hindus and 1,869 Musalmáns), the occupation of those numbering more than forty members are as follows:—Barbers (160), beggars (109), brick-layers (47), butchers (135), carpenters (78), cartmen (161), confectioners (40), cultivators (420), goldsmiths (46), grain-dealers (62), green-grocers (93), grocers (40), labourers (854), landowners (111), cloth-sellers (90), money-lenders (91), oil-makers (51), pandits (55), purohits (43), servants (738), shop-keepers (548), shoemakers (77), sweepers (76), tailors (40), water-carriers (56), and weavers (145).

Hápur is situated in the angle formed by the Balaudshahr and Meerut high road coming from the south, and the Delhi and Garhmuktesar running from east to west. The elevation of the stone bench-mark imbedded at the encamping-ground on the south-west side of the Meerut road is 692·94 feet above the level of the sea. Between the roads and the town are several fine groves and some cultivated land, so that the town itself is hardly visible from either road. There are five gates—the Delhi, Meerut, Garhmuktesar, Kothi and Sikandra, or rather the names have survived, for little remains of either the gates or of the wall and ditch that once surrounded the town, now exist. Towards the Jamah Masjid or principal mosque, in the centre of the town, the site is somewhat high, but, as a rule, it is level, and in places even lower than the surrounding fields. To the north the drainage finds its way to a large irregular excavation close to the Delhi road, and on the south-east there is a large reservoir connected with the Ohhoiya Nála which carries off the superfluous moisture from three-fourths of the town. About the town, on all sides, are numerous small excavations often full of stagnant water. The principal bazar, known as the Purána Bazar, runs from the Meerut to the Delhi gate. To the west of this are the Purána and Náya Mandís or markets and Mahádeoganj, all large business-places running parallel to each other, and bounded on the north by the Khubári Bazar, and on the south by the Bazáz and Halwái Bazars, which run out west from the Purána Bazar. All these bazars are lined with shops and form a compact business quarter. The Musalmáns reside chiefly to the east, and here the character of the town is that of a large agricultural village full of cattle and the appliances of husbandry. To the west the streets are mostly metalled and

drained by saucer drains made by bricks, and the houses are good, but to the east and throughout the suburbs, apart from the principal roads, the roads are mere broken waterways uneven and unmade. The water is found in wells at a depth of 30 feet from the surface, and is good. There is no canal irrigation within four miles, and though fever occurs during the rains, the general health of the people is good.

The tahsili and police-station are situated outside the town on the Bulandshahr road, and are accommodated in a large brick-built structure inclosing a courtyard, well shaded with trees. The school is within the town in the Khabári Bazar and English is taught to an average of 49 pupils. The dispensary is in the centre of the town in a good building purchased for the purpose, and has a daily attendance of about 30 patients. There are three saráis on the Meerut road and two others elsewhere, beside an encamping-ground for troops. There are 28 mosques and 25 temples in the town, and several schools where the Korán is taught to about 60 boys. The Chaukidári Act was in force in Hápur for many years, but since March, 1872, the Municipal Act has been introduced.

Municipality. There is a large market here every Monday, and a considerable trade in saccharine produce, grain, cotton, timber, bambus and brass utensils is carried on. The affairs of the municipality are managed by a committee comprising three official members and six members elected by the tax-payers. The income is obtained from an octroi tax, which in 1874-75 fell at Re. 1-0-3 per head of the population. The following statement shows the income and expenditure for four months of 1872-73 and for the entire years 1873-74 and 1874-75:—

Receipts.	1872-73.	1873-74.	1874-75.	Expenditure.	1872-73.	1873-74.	1874-75.
	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.
Opening balance,...	881	3,013	613	Collection,...	651	1,616	1,492
Class I.—Food and drink,...	3,249	6,943	7,170	Head-office,...	49	60	60
" II.—Animals for slaughter,...	48	257	380	Original works,...	600	5,588	4,837
" III.—Fuel, &c.,...	269	630	656	Supervision,...	30	120	120
" IV.—Building materials,...	414	652	616	Repairs, &c.,...	...	855	664
" V.—Drugs, spices, &c.,...	186	428	417	Police,...	1,074	3,427	2,940
" VI.—Tobacco,...	30	108	118	Lighting,...	36	419	600
" VII.—Textile fabrics,...	231	1,134	1,226	Education,...	...	240	238
" VIII.—Metals,...	343	975	964	Conservancy,...	252	1,224	1,289
" Total of octroi,...	4,770	11,127	11,347	Charitable grants,...	...	492	600
Rents,...	100	215	184	Miscellaneous,...	93	130	249
Fines,...	37	195	120				
Pounds,...	10	152	...				
Miscellaneous,...	...	82	2,464				
Total,...	15,798	14,34	14,728	Total,...	2,765	14,171	13,084

The character of the imposts will be seen from the following table showing the imposts of 1873-74 :—

Statement showing imports of taxable articles for two years in Hápúr Municipality.

Articles.	NET IMPORTS IN				CONSUMPTION PER HEAD IN			
	1873-74.		1874-75.		1873-74.		1874-75.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Mds.	Rs.	Mds.	Rs.	Mds. s. c.	Rs. a. p.	Mds. s. c.	Rs. a. p.
Grain, ...	108,841	...	110,720	...	7 19 11	...	7 32 1	...
Sugar refined, ...	4,167	...	5,283	...	0 0 0½	...	0 14 8	...
" unrefined, ...	20,618	...	17,016	...	1 28 2	...	1 5 15	...
Ghi, ...	1,168	...	1,063	...	0 3 8	...	0 3 0	...
Other articles of food, ...	10,976	1,728	14,757	1,348	Besides head loads and bundles.			
Animals for slaughter, ...	1,810	No. ...	3,138	No. ...	½ a head	...	½ a head	...
Oil and oil-seeds, ...	5,595	...	5,650	...	0 15 6	...	0 17 0	...
Fuel, &c., ...	13,923	...	10,083	...	...	...	...	...
Building materials, ...	...	80,339	...	23,922	...	2 1 6	...	1 10 4
Drugs and spices, ...	...	20,958	...	20,442	...	1 7 1	...	1 6 6
Tobacco, ...	1,301	...	1,365	...	0 3 9	...	0 3 12	...
European, and native cloth.	...	73,632	...	76,478	...	5 1 0	...	5 4 1
Native shoes, ...	...	1,781	...	1,473	...	0 2 0	...	0 1 9
Metals, ...	2,784	1,649	2,726	1,081	0 7 10	0 1 9	0 7 7	0 1 2

Hápúr is as well drained a town as any in these Provinces ; its roads are in admirable order and its conservancy very good indeed.

Hápúr is said to have been founded by Hardat, a Dor chieftain, about 983

A.D., and called after him Haripur. Others say that

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Ghais-ud-dín Tughlak on visiting the place found the

people going about naked and called it Hayapur, or town of shame, and hence the name Hápúr ; but the most probable derivation is from *Hápúr*, which signifies 'an orchard' or grove, such as abound in the town. In confirmation of this suggestion it may be mentioned that the people do not pronounce the name of the place as Hápúr, but Hápár, though it is always written Hápúr. Perron established here a vast system of *jágírs* or grants for the disabled or worn-out veterans of his army, which was adopted by the British for many years. In the Meerut records are numerous papers giving details of contracts for clearing waste lands of jungle for the benefit of invalids admitted as *jágírdárs*. In March, 1805, Ibráhim Ali, tahsildar of Hápúr, defended the station against Amír Khán and 500 Pindáras. In the mutiny Hápúr was threatened by the forces of Walidád Khán of Málágarh, who were obliged to retire by the loyal Játs of Bhatona. At the village of Jasrúpúgar Ashurpur there is a celebrated *bauli* or masonry well constructed of Agra sandstone, some 500 years ago, by one Ashur Khán, a commander in the army of Ghais-ud-dín.

HÁPUR, a parganah in the tahsíl of the same name in the Meerut district, is bounded on the north by Saráwa, on the east by Garhmuktesar, on the west by Dásna, and on the south by the Bulandshahr district. According to the census of 1872 the total area then amounted to 162 square miles and 441 acres, of which 121 square miles and 404 acres were cultivated. The area assessed to Government revenue was 153 square miles and 165 acres, of which 114 square miles and 98 acres were cultivated, 18 square miles and 585 acres were culturable, and 20 square miles and 122 acres were returned as unculturable.

Though all the nálás and drainage channels of the Hindan-Ganges duáb, after traversing the whole length of the parganah, unite together at the south, the general level as shown by the Great Trigonometrical Survey statistics, given under the district notice, proves that the fall in level is gradual throughout. Owing in a great measure, however, to this fact, the soils are poorer in quality, a large portion of the area being sandy *bhúr* of little value and entirely dependant upon the rains. In estates at a distance from the drainage channels the soils are excellent, so that in this parganah we have some of the highest and the lowest rents in the entire district. The area at the past and present settlements has been given under the district notice. It is only necessary to notice here that the drainage channels referred to above cut off irrigation by canals; well-irrigation is attainable, however, at a small cost, and with water near the surface. In time of drought this parganah would be one of the first to suffer as containing the maximum of estates dependant upon rainfall. It would therefore be well to meet the desire of the landholders to construct wells more than half way, as recommended by Mr. Forbes. Judicious grants of *takkávi* for this purpose would go far towards removing all fear of great distress in seasons of drought. At the recent settlement about one-half the total cultivated area (79,038 acres) was irrigated, of which only 3,838 acres were watered by canals, while 35,513 acres drew their water-supply from wells and 1,028 acres from tanks.

The transfers during the currency of the past settlement amounted to nearly one-fifth of the area assessed to Government revenue; of these 5,740 acres passed from the hands of the old proprietors by forced sale, 4,596 acres were temporarily transferred by mortgage, and 11,833 acres by private sale. Mr. Forbes writes:—"The Játs have bought up much land and parted with little, and I regret to find that the money-lenders have come largely into the market. The Tagas have lost some of their lands, selling 2,000 acres more than they have purchased." The balances in this parganah have been heavy compared with other tracts, and were principally due to the dearth of 1860-61, and for the reasons above given, "this parganah will need to be instantly looked after in seasons of drought, but

with proper precautionary measures for employment there need only be a postponement of the demand." Rent-rates and other matters relating to the economical history of the parganah have been sufficiently noticed in the account of the district. Altogether, owing to the predominance of the Jâts in both the landowning and cultivating classes, the very most is done which industry can effect in a poor soil, and Hâpur must continue one of the worst parganahs in the district.

The following statement compares the statistics of the former and present settlements :—

Period of settlement.	Total area.	Barren and revenue-free.	Cultivable.	(CULTIVATED.)			Total assessable.	Land-revenue.	Revenue-rate on cultivated area.
				Wet.	Dry.	Total.			
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres	Rs.	Rs. a. p.
Former, ...	99,077	12,283	21,559	19,261	46,974	65,235	86,794	1,20,579	1 13 6
Present, ...	1,04,121	13,750	12,548	32,878	37,915	77,823	90,371	1,33,900	1 11 6

According to the census of 1872 parganah Hâpur contained 133 inhabited villages, of which 23 had less than 200 inhabitants; 46 had between 200 and 500; 45 had between 500 and 1,000; 14 had between 1,000 and 2,000; 3 had between 2,000 and 3,000; and one had between 3,000 and 5,000. The only town containing more than 5,000 inhabitants is Hâpur itself, with 14,544 inhabitants. The total population in 1872 numbered 96,776 souls (45,430 females), giving 594 to the square mile. Classified according to religion there were 75,481 Hindus, of whom 35,276 were females; 21,268 Musalmâns, amongst whom 10,145 were females; and 27 Christians. Distributing the Hindu population amongst the four great classes, the census shows 9,403 Brahmans, of whom 4,470 were females; 4,372 Rajpûts, including 1,985 females; 5,317 Baniyas (2,468 females), whilst the great mass of the population is included in "the other castes" of the census returns, which show a total of 56,389 souls, of whom 26,353 are females. The principal Brahman subdivisions found in this parganah are the Gaur (7,896), Saraúst (750), Bhât (174), Dakaut (167), Achâraj (54), Bohra, Dasa, and Pachhâda. The Rajpûts belong to the Tonwâr (2,099), Chauhân (162), Badgrûjar, Gahlot and Râna clans, and the Baniyas to the Agarwâl (4,720), Saraugi (38), Bishni (169), and Mahesri subdivisions. The other castes having more than one thousand members each are the Taga (3,762), Mâli (1,714), Koli (2,675), Garariya (1,449), Kabâr (1,770), Haj-

jám (1,566), Ját (9,761), Kumhár (1,810), Chamár (17,736), Bhanqi (3,092), and Gújar (3,976). Those having less than one thousand members are the Jogi, Barhai, Sonár, Bharbhúnja, Dhúna, Juláha, Gosháin, Ahír, Bairági, Khattri, Káyath, Chhípi, Kalál, Dhobi, Lodha, Nat, Khatík, Teli, Saisi, Dhanak, Kanjar, Baheliya, Gadhaíla, Ghosi, Fakír, and Ráj. Musalmáns are distributed amongst Shaikhs (16,981), Patháns (864), Sayyids (754), and Mughals (50). The remainder are entered in the census records without distinction of race.

The occupations of the people during the same year showed that among the male adult population, 757 persons were engaged in professional employments; 2,123 were employed in commerce; 12,903 in agriculture; 4,192 in domestic service; 5,502 in manufactures and the mechanical arts; 5,221 were returned as labourers, and 876 had no specified occupation. Taking the whole population, the same inquiry set down 10,863 as landholders, 27,363 as cultivators, and 58,550 persons as engaged in avocations unconnected with the cultivation of the soil. The educational statistics are too untrustworthy for record, giving only 2,549 as able to read and write out of a male population numbering 51,346 souls. Hápúr contained the tappas of Gohra or Gaura, Hájipur, and Hápúr. In 1809 it was attached to the Meerut tahsíl. In 1819, Hápúr, Ajrára, Saráwa, Garhmuktesar, Bhojpur, and Jalálabad formed a tahsíl. There were 86 estates, with an area of 67,616 acres, in Hápúr in 1852, and these were increased by transfers to 144 estates, comprising 105,432 acres in 1853.

HÁPÚR, a tahsíl in the Meerut district, comprises the parganahs of Hápúr, Saráwa, Garhmuktesar, and Púth, each of which is separately noticed. The area in 1872 comprised 408 square miles and 484 acres, of which 284 square miles and 541 acres were cultivated. The area assessed to Government revenue amounted to 389 square miles and 275 acres, of which 269 square miles and 164 acres were cultivated, 63 square miles and 539 acres were culturable, and 56 square miles and 212 acres were barren. The land-revenue during the same year amounted to Rs. 2,94,125 (or with cesses Rs. 3,25,347), falling on the total area at Re. 1-2-0 per acre, on the area assessed to Government revenue at Re. 1-2-11, and on the cultivated acre at Re. 1-9-10. The population numbered 205,140 souls (96,663 females), giving 501 to the square mile, and distributed amongst 308 villages. The same statistics show 18 persons as insane, 6 idiots, 26 deaf and dumb, 657 blind, and 73 lepers. All other subjects are noticed either under the district itself or separately under each parganah.

HASTINÁPÚR, an old town in the parganah of the same name in the Meerut district, lies 22 miles to the north-east of Meerut. The population in 1872 was only 77. It is said to mark the portion of the site of the ancient Pándava city, of which some account has been given in the introduction.

HASTINÁPUR, a parganah in tahsíl Mawána of the Meerut district, is bounded on the north by the Muzaffarnagar district, on the east by the Ganges, on the south by Kithor, and on the west by parganah Meerut. According to the census of 1872 the total area then comprised 241 square miles and 346 acres, of which 125 square miles and 530 acres were cultivated. The area assessed to Government revenue amounted to 241 square miles and 229 acres, of which 125 square miles and 468 acres were cultivated, 80 square miles and 336 acres were culturable, and the remainder was barren.

The best villages in the parganah lie between Phitkari on the north and Nagauri on the south. These contain good soils with water close to the surface and good capability for well-sinking. Further east by Mahmúdpur and Bahsúma the water-level sinks and the soil is mixed, while there is no capability for well digging, but to a certain extent canal water is available. In the south and south-east of the parganah the soils are still coarse and there is no irrigation. For the lands of the first tract, a rent-rate of Rs. 6 an acre was assumed at the recent settlement; for the good portion of the second tract when irrigated Rs. 4-12-8 per acre, and unirrigated Rs. 3-9-6 per acre, and for the inferior parts Rs. 2 per acre. In the third tract, in some parts, the rate has fallen as low as Re. 1-8-0, or five annas per kuchcha bígha, the rate prevailing in *chorh* or high sandy land. Cultivation has increased from 60,704 acres to 75,792 acres in Hastinápur, or 25 per cent., during the currency of the past settlement.

Irrigation has increased from 8,795 acres to 28,981 acres, or 33·0 per cent., and in the proportion to the total cultivated area has risen from 14 to 38 per cent. This is chiefly due to the opening of the Anúpshahr branch of the Ganges Canal, which has, in a great measure, supplied villages formerly destitute of the means of irrigation. The general history of

Irrigation. the past and present settlements has been sufficiently indicated under the district notice. It is merely necessary to notice that the land-revenue has risen from Rs. 1,06,549 to Rs. 1,40,425, giving an increase of Rs. 33,876, or 32 per cent., in the upland villages alone. In both classes the revenue has increased from Re. 1,14,462 to Re. 1,48,780, and the rate per acre on the cultivation from Rs. 1-14-2 to Re. 1-15-4. The following statement shows these statistics in detail:—

Period of settlement	Total area.	Barren and revenue-free.	Cultivable.	CULTIVATED.			Total assessable.	Land-revenue.	Revenue-rate on cultivated area.
				Wet.	Dry.	Total.			
	Acres.	Acres.	Acres	Acres	Acres.	Acres.	Acres.	Rs.	Rs. a. p.
Former, ...	108,961	14,469	33,788	8,795	51,909	60,704	94,492	1,14,462	1 14 2
Present { Khádir,	52,779	7,163	42,520	39	3,057	73,096	45,616	1,48,780	1 14 5
{ Bángar,	101,371	5,485	10,922	28,969	45,995	4,964	85,886		

According to the census of 1872 parganah Hastinapur contained 139 inhabited villages, of which 50 had less than 200 inhabitants; 38 had between 200 and 500; 32 had between

500 and 1,000; 14 had between 1,000 and 2,000; one had between 2,000 and 3,000; and 3 had between 3,000 and 5,000. The only town containing more than 5,000 inhabitants is Mawána, with 6,714 inhabitants. The total population in 1872 numbered 75,344 souls (34,612 females), giving 311 to the square mile. Classified according to religion there were 59,982 Hindus, of whom 27,349 were females; 15,362 Musalmáns, amongst whom 7,263 were females. Distributing the Hindu population amongst the four great classes, the census shows 4,401 Brahmans, of whom 2,002 were females; 2,747 Rajpúts, including 1,251 females; 3,725 Baniyas (1,709 females); whilst the great mass of the population is included in "the other castes" of the census returns, which show a total of 49,109 souls, of whom 22,387 are females. The principal Brahman subdivisions found in this parganah are the Gaur (3,949), Bhát (81), Sarasút, Dakaut, and Acháraj. The Rajpúts belong to the Chauhán (2,604) and Tonwár clans, and the Baniyas to the Agarwál (1,122), Sarangi (17), Gadariya, Bishni, Bishnoi, Raja-ki-barádari, Rastangi, and Mahesri subdivisions. The other castes exceeding in number one thousand souls each are the Máli (1,128), Garariya (1,005), Kahár (1,931), Ját (6,996), Kumbár (1,454), Chamár (16,721), Bhangi (2,262), and Gújar (8,925). The following have less than one thousand members each:—Taga, Jogi, Hajjám, Barhai, Sonár, Bharbhúnja, Dhúua, Juláha, Gosháin, Ahír, Káyath, Chbipi, Kalál, Khatík, Saisi, Fakír, Saini, Kamboh, Patwa, Sapera, Baholiya, and Banjára. Musalmáns are distributed amongst Shaikhs (12,781), Patháns (1,133), Sayyids (1,116), and Mughals (6): the remainder are unspecified.

The occupations of the people are shown in the statistics collected at the census of 1872. From these it appears that of the male adult population (not less than fifteen years of age), 362 are employed in professional avocations, such as Government servants, priests, doctors, and the like; 2,551 in domestic service, as personal servants, water-carriers, barbers, sweepers, washermen, &c.; 868 in commerce, in buying, selling, keeping or lording money or goods, or the conveyance of men, animals, or goods; 12,154 in agricultural operations; 4,267 in industrial occupations, arts and mechanics, and the preparation of all classes of substances, vegetable, mineral, and animal. There were 4,291 persons returned as labourers and 566 as of no specified occupation. Taking the total population, irrespective of age or sex, the same returns give 7,567 as landholders, 27,319 as cultivators, and 40,458 as engaged in occupations unconnected with agriculture. The educational statistics, which are confessedly imperfect, show 1,306 males as able to read and write out of a total male population numbering 40,732 souls. In

1852 there were two parganahs: Niloha with 128 estates and 104,493 acres, and Tārapur with 49 estates and 58,245 acres; these were amalgamated under the name Hastināpur in 1853, which was fixed to comprise 166 estates and 150,950 acres.

INCHAULI, a large village in parganah Meerut, is distant seven miles and seven furlongs from Meerut. The population in 1872 was 2,187. There is a police-station here.

JAGAULI, a small village of 52 inhabitants in parganah Loni, is distant $27\frac{1}{2}$ miles from Meerut. There is an outpost of police here.

JALĀLABAD, a parganah in tahsil Ghāziabad of the Meerut district, is bounded on the north by Meerut, on the east by Sarāwa and Hāpur, on the west by Bāgpat and Loni, and on the south by Dāsna. According to the census of 1872 the total area then contained 201 square miles and 123 acres, of which 145 square miles and 514 acres were cultivated. The area assessed to Government revenue showed 198 square miles and 491 acres, of which 144 square miles and 29 acres were cultivated. Of the remainder 26 square miles and 216 acres were returned as unculturable.

The Hindan forms the western boundary of the parganah, which is traversed throughout its entire length by the Dehli and Meerut Grand Trunk Road and the Ganges Canal. The villages to the east of the Dehli road are inferior to those lying to the west. Some of the estates to the south-east bordering on Dāsna are as rich as any in the parganah, and again, as a rule, those lying immediately on the Hindan are the poorest. The Ganges Canal passes through the most fertile tract in the parganah, and this will account for the small increase (8,795 acres) in cultivation since last settlement. Irrigation has increased from 26,156 acres to 66,030 acres. About half the irrigated area is watered from wells, whilst extensive areas of land have their fine well capability destroyed and supplanted by the canal. The general history connected with the past and present settlements of this parganah and other matters pertaining to its economical history are sufficiently indicated in the district notice. One remarkable fact is shown by the recent inquiries, and this is, that at the former settlement the rich western villages were assessed at only Re. 1 per acre, whilst many of the poor villages on the east paid Rs. 2. At the present settlement the former have been enhanced and the latter relieved to a certain extent of their unequal burdens. It may be as well to note here that the increase in the barren area is principally due to land having been taken up for the Ganges Canal and its distributaries. Twenty-three per cent. of the total area has changed hands during the currency of the past settlement; of this 15,764 acres were by private sale, 6,472 acres by forced sale, and 5,173 acres by mortgage. The largest landholders, as well as sellers and buyers, were Tagas and Jāts. Jāts hold 41 entire estates besides chief shares in 15 others, and

Hindu Tagas hold 40 estates and shares in 23 others. These Tagas rebelled in 1857 and committed murder in several instances, so that seven of their villages were confiscated, making a considerable difference in the transfer returns. Tagas and Játs prevail amongst the cultivators, and the former and the Rajpúts seem to have benefited by the example of the industrious Játs around them. The chief products grown bear the following proportion to the total cultivated area:—*Kharif*, sugarcane, 7 per cent. ; cotton, 10 ; maize, 6 ; *chari* for fodder, 7 ; and *joár*, 18 per cent. In the *rabi* harvest wheat shows 24 per cent. ; gram, 6 ; barley, 3 ; and wheat and gram mixed, 12 per cent.

The following statement compares the statistics of the past and present settlement:—

Period of settlement.	Total area.	Barren and revenue-free.	Cultivable.	CULTIVATED.			Total assessable.	Land-revenue.	Revenue-rate on cultivated area.
				Wet.	Dry.	Total			
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Rs.	Rs. s. p.
Former, ...	126,626	17,984	26,348	26,156	57,238	83,394	108,742	1,43,580	1 11 6
Present, { Khádír,	5,523	379	1,254	782	2,608	3,390	4,644	1,75,055	1 14 4
{ Báugar,	123,240	17,529	16,912	65,748	23,051	88,799	105,711		

According to the census of 1872 parganah Jalálabad contained 134 inhabited villages, of which 21 had less than 200 inhabitants ; 46 had between 200 and 500 ; 30 had between 500 and 1,000 ; 28 had between 1,000 and 2,000 ; 4 had between 2,000 and 3,000 ; and 5 had between 3,000 and 5,000. The total population in 1872 numbered 105,559 souls (48,392 females), giving 525 to the square mile. Classified according to religion there were 86,197 Hindús, of whom 39,186 were females ; 19,362 Musalmáns, amongst whom 9,206 were females. Distributing the Hindu population amongst the four great classes, the census shows 10,737 Brahmans, of whom 4,880 were females ; 1,569 Rajpúts, including 660 females ; 4,432 Baniyas (2,035 females) ; whilst the great mass of the population is included in "the other castes" of the census returns, which show a total of 69,459 souls, of whom 31,611 are females. The principal Brahman subdivisions found in this parganah are the Gaur (9,734), Sarasút (88), Bhát, Dakaut (115), Acháraj (172), Bohra, Chaarasya and Gautam. The Rajpúts belong to the Touwár (1,040), Chanhán (257), Thákuriya and Hanumán clans, and the Baniyas to the Agarwál (3,781), Saraugi (268), Gadariya (163), and Mahesri subdivisions. The other castes numbering more than one thousand members each are the Taga (10,485), Máli (1,668), Kahár (2,528), Hajjám (2,113), Barhai (1,135), Ját (14,299), Kumhár (1,870),

Chamár (15,573), Bhangi (4,916), Juláha (1,516), Gújar (3,387), and Ahír (2,018). Those having less than one thousand members are the Jogi, Koli, Garariya, Sonár, Lohár, Bharbhúnja, Dhúna, Gosháin, Bairági, Khattri, Káyath, Chhípi, Kalál, Dhobi, Nat, Lodha, Khatík, Rahti, Baheliya, Orh, and Sádhi. The Musalmáns are distributed amongst Shaikhs (9,030), Sayyids (402), Mu-ghals (334), and Patháns (1,309) : the remainder are unspecified.

The census statistics show that of the male adult population 710 were engaged in professions ; 3,985 in domestic service ; 2,002 in commerce ; 17,758 in cultivating the soil ; 4,788 in the mechanical arts and manufactures, whilst 5,767 were returned as labourers and 1,017 of no specified occupation. Of the total population 23,083 are shown as landholders, 25,854 as cultivators, and 56,622 as pursuing callings unconnected with agriculture. The educational statistics give only 1,632 males out of a total male population numbering 57,167 souls as able to read and write. In the reign of Akbar Jalálabad was included in sirkár Dehli. In 1809 Jalálabad was included in the tahsíl comprising parganahs Ajrára, Saráwa, Bhojpur, and Jalálabad ; the total land-revenue of this tahsíl was but Rs. 94,527. The present revenue of this parganah alone is Rs. 1,76,718. At Sultánpur, in this parganah, there is a fine temple built by Játa, called *Shámjika-mandir*. At Rauli there is a fine *shiwála* and at Sikrí khúrd a temple of Kalka Devi, at which a religious fair is held in Chait and Asárh. Arífpur possesses a fine tank, and Makimpur has the ruins of a small fortress built by Guláb Singh, Rajpút. This fort was demolished by the British in 1861. Bhojpur, formerly the head-quarters of a *tappa* and subsequently of a parganah, contains a few remains of interest.

JALÁLABAD, the chief village of the parganah of the same name, is distant $17\frac{1}{2}$ miles from Meerut. The population in 1872 was 3,037. It is a purely agricultural village of no note whatever.

JÁNI KALÁN, a village in parganah Meerut of the Meerut district, is situated close to the main branch of the Ganges canal at a distance of nine miles from Meerut. The population in 1872 was 1,059. It has a first-class police-station. One mile to the east is the village of Jáni khurd, with a population in 1872 numbering 1,439 souls.

KAHWAL, a village in parganah Sardhana of the Meerut district, situated on the Hindan *bánger* about 16 miles from Meerut. In 1865 the population was 2,502, and in 1872 was 2,707, mostly Hindu and Musalmán Rajpúts. The place is very old, and was made the head-quarters of a tahsíl establishment by the Begam, Bála Báí, of Gwalior.

KAILI, a small village in parganah Saráwa of the Meerut district, is distant 15 miles from Meerut. The population in 1872 was 1,366. There is an out-post of police here.

KANKAR KHERA, a village in parganah Meerut, is distant a little over two miles from Meerut. The population in 1872 numbered 1,148 souls, occupying 285 houses. It is united with the villages of Kasera, Bagsar, and Khera Bagsar for the purposes of the Chaukidári Act. In 1873 the Act supported a village police numbering 26 men of all grades at an annual cost of Rs. 1,848. This is met from a house-tax, which in 1872-73 yielded a revenue of Rs. 2,307, falling at Re. 0-10-5 per head of the population and Re. 1-8-11 per house assessed (1,479). The expenditure during the same year was Rs. 2,744, which was met from the income and a balance of Rs. 453 from the previous year.

KARNÁWAL is a large Ját village situated in parganah Sardhana of the Meerut district, 15 miles from Meerut. In 1865 the population was 4,264, and in 1872 was 3,985. The Játis are said to have appropriated Karnáwal 200 years ago. At first a new village was erected by the Játis, but in course of time they got possession of the old village and abandoned the new one. This is now the khera. At a little distance from the present site are the remains of a very large village which is said to have been wrested by the invading Musalmáns from the Rajpúts and then burnt down.

KASIMPUR or Nagla Káshi, a village in parganah Meerut, is distant 4·6 miles from Meerut. It has a police-station and a population numbering 598 in 1872.

KHARKODA or KHARA KHONDA, a town in the Meerut district in parganah Saráwa and tahsil Hápur, is distant from Meerut nine miles. The population in 1865 was 3,433, and in 1872 was 3,517. The town is very ancient, and is said to have contained the horse and elephant stables of the Hastinápur Rajas : hence the name Khara Khonda or Kharkoda. The town began to flourish in Humáyún's time, and the opening of the trunk road to Calcutta through it has accelerated its progress. The principal inhabitants are Hindu Tagas. There is a first-class police-station and a district post-office here. The elevation of the stone bench-mark of the Great Trigonometrical Survey in the south-east corner of the oneamping-ground near the *bardásht-khana* is 713·51 feet above the level of the sea.

KHEKARA, Khekora or Kahkra, a town in parganah and tahsil Bágpát of the Meerut district, is distant 26 miles from Meerut. The population in 1853 was 5,823, and in 1865 was 6,045. It is said to have been founded 1,500 years ago, and 1,000 years since the Játis emigrated from Sikandarpur and ousted the Ahírs of Khekara from all save one *patti*, appropriating the land themselves. During the mutiny one *patti*, Chakarsainpur-Raghunáthpur, rebelled and was confiscated. Subsequently it was given over to the zamíndárs of the *patti* Khekara khás, who, on account of their loyalty, pay for their lives but three-fourths of the Government revenue assessment. There is a fine Jain temple here, also a second-class police-station.

KIRTHAL, a large Ját village in parganah Ohhaprauli and tahsíl Bágpát of the Meerut district, is distant 24 miles from Meerut. In 1865 the population was 5,568, and in 1872 there were 5,651 inhabitants, of whom 4,814 were Hindus (2,246 females) chiefly Játs, and 837 were Musalmáns (389 females). There are about 50 brick-built and 1,400 mud-built houses in the village. The site is slightly raised and is bounded on the west by a lake-like expanse of water, having a depth of ten feet in January, and on the east by two smaller excavations. A cut drains the surplus water hence into the Jumna at Lobári, a distance of twelve miles. The depth from the surface of water in the wells has risen, since the introduction of the canal, from 40 feet to 5 feet from the surface. In January the principal well had a depth of 25 feet of water. There are few trees, and the place has a bare look. There is no bazar and the ways are unmade, low and broken, and the whole place has a damp appearance. All around the moisture is excessive, and, according to Dr. Planck, spleen enlargement, palsy, paralysis and rheumatism are common complaints. Kirthal, according to local tradition, was founded by one Kírat of the Máli or gardener caste, who called the place, after his own name, Kírat-sthala : hence the modern name Kírtal or Kirthal. He was expelled by the Játs on their arrival in the duáb, and Játs have ever since occupied the village. Mr. Forbes writing in 1865 says :—"The Játs first gained footing in the Ohhaprauli, Kutána and Baraut parganahs, driving out before them the Tagas, and thence they spread themselves, though in less compact bodies, over the whole district." The local date for this immigration is 1,100 years ago.

KITHOR or Kithor khás, a town situated in parganah Kithor and tahsíl Ma-wána of the Meerut district, is distant 16 miles from Meerut on the Garhmuktesar road. In 1865 the population was 3,320, and in 1872 was 3,462, consisting principally of converted Tagas of the Maheshwara got. The site stands to the north of the Meerut metalled road and drains by means of four culverts into a great excavation to the south of the road ; still in the rains the eastern portion of the site is often flooded. The entrance to the town from the main Meerut road is at this point and passes into the small square bazar surrounded by a few shops, poor and ill-made. The houses stretch in an irregular line further west and parallel to the high road, and in the midst are the ruins of Nain Singh's fort, now used as a receptacle for rubbish. There are only about sixty brick-built houses altogether, the roadways are unmade, and the place and people look poor and miserable. There are about ten good wells, in the highest of which the water is found at a depth of 45 feet from the surface, and in the lowest at about 22 feet. The water level has risen about eight feet since the introduction of the Anúpshahr branch of the Ganges canal, which irrigates about one-third of the townland. To the north drainage flows into a second large excavation, but, on the whole, the public health is good. There is a good school here, where

some 30 pupils are taught, a police-station, and a military encamping-ground. Kithor was formerly the head-quarters of tappa Kithor in parganah Saráwa, and with Púth formed a portion of the *mukarari* of the Gújar Raja Nain Singh. The town is a purely agricultural one and possesses no trade of any kind.

KITHOR, a parganah in tahsíl Mawána of the Meerut district, is bounded on the north by pargana Hastinápur, on the south by Hápur and Garhmuktesar, on the east by the Ganges, and on the west by the Meerut parganah. Kithor, according to the census of 1872, contained a total area amounting to 189 square miles and 432 acres, of which 131 square miles and 369 acres were cultivated. The area assessed to Government revenue comprised 187 square miles and 471 acres, of which 130 square miles and 500 acres were cultivated and 34 square miles and 94 acres were culturable. The remainder was barren.

Like other riverine parganahs Kithor may be divided into the *khádir* or Condition of the lowlands in the river valley and *bángar* or uplands. The parganah. former are extensive, lying between the Búrh Ganga, or old bed of the Ganges, and its present bed, with an average breadth of from three to six miles. The soil is fertile and yields good crops of rice, wheat, and barley. On the oliff forming the edge of the uplands the surface is broken and well-irrigation is impossible, but inland the soils of the high ground are fairly good, and the capabilities for well sinking are good, with water near the surface. The only exception is where ridges of sand intersect the good soils. These are numerous, and in their immediate neighbourhood the villages are poor, and indeed all through the parganah; though there are few that can be called altogether bad, yet there are also few that are entirely free from sand and poor patches of light soil. Irrigation has doubled in this parganah, rising from 11,292 acres to 23,234 acres, of which 10,825 acres are watered from wells, 11,845 acres from the canal, and 564 acres from tanks. Here, as elsewhere, it is noticed that the canal water has a remarkable effect in improving the quality of sugar. The tracts devoid of natural irrigation have benefitted much from the canal. At present the supply of water is insufficient for the demand, and in many villages, though large areas are entered as irrigated, the actual irrigation is but nominal. Cultivation, too, has risen from 64,862 to 81,200 acres, or 25 per cent., but there is still culturable waste equal to one-fourth of the cultivation, awaiting the plough.

The general history of the past and present settlements has been given under the district notice. The Tagas, either Hindu or Musalmán, hold 44 estates and shares in 17 others; Játs, 29; Gújars, 18; Ahírs, 12; and Rajpúts, 6. The chief tenure is *zamindári*. Kithor contained the only *talukadári* tenure in the district, *viz.*, the small estate of Parí-chhatgarh, comprising six villages, held in *jágír* by Ráni

Fiscal history.

Sahib Kunwar up to her death in 1854, when they lapsed, and at the subsequent settlement engagements were taken from the village communities. The landless cultivators are chiefly Gújars, attracted by the pasturage lands of the *khádir*, which form the best pig preserves in the district. The following statement compares the former and present settlements :—

Period of settlement.	Total area.	Barren and revenue-free.	Culturable.	CULTIVATED.			Total assessable.	Land-revenue.	Revenue-rate on cultivated area.
				Wet.	Dry.	Total.			
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Rs.	Rs. a. p.
Former, ..	97,770	8,836	27,399	11,248	50,287	61,535	88,934	92,237	1 7 11
Present, { Khádir, ...	27,557	4,940	17,010	148	5,459	5,607	22,617	1,10,880	1 7 6
{ Bángar ...	93,414	10,463	7,358	23,036	52,507	75,593	82,951		

According to the census of 1872 parganah Kithor contained 124 inhabited villagos, of which 35 had less than 200 inhabitants ; 37 had between 200 and 500, 34 had between 500 and 1,000 ; 10 had between 1,000 and 2,000 ; 3 had between 2,000 and 3,000 ; and 5 had between 3,000 and 5,000. There are no towns containing more than 5,000 inhabitants. The total population in 1872 numbered 70,152 souls (32,559 females), giving 369 to the square mile. Classified according to religion there were 51,605 Hindus, of whom 23,716 were females ; 18,534 Musalmáns, amongst whom 8,838 were females ; and 13 Christians. Distributing the Hindu population amongst the four great classes, the census shows 5,315 Brahmans, of whom 2,490 were females ; 697 Rajpúts, including 317 females ; 2,673 Baniyas (1,210 females) ; whilst the great mass of the population is included in " the other castes " of the consus returns, which show a total of 42,920 souls, of whom 19,699 are females. The principal Brahman subdivisions found in this parganah are the Gaur (4,381), Sarasút (170), Bhát (94), Acháraj (98) Dakaut, Taga and Pallowál. The Rajpúts belong to the Tonwár (218), Gaur and Chauhán (319) clans, and the Baniyas to the Agarwál (1,274), Gadariya (723), Saraugi (53), Mahesri, Raja-ki-barádari, and Rastaugi subdivisions. Other castes comprising more than one thousand persons each are the Taga (3,126) Garariya (1,526), Kahár (1,283), Ját (4,216), Kumhár (1,322), Chamár (13,358), Bhangi (2,339), Gújar (7,235), and Ahír (1,654). Those having less than one thousand members are the Máli, Jogi, Koli, Hajjám, Sonár, Barhai, Bharbhúnja, Dhúna, Juláha, Gosháin, Bairági, Káyath, Chhípi, Kalál, Nat, Lodha, Khatík, Kanjar, Saini, Pási, Baheliya, and Bengáli. The Musalmáns

are distributed amongst Shaikhs (15,580), Patháns (1,201), Sayyids (567), and Mughals (10): the remainder are unspecified.

The occupations of the people are shown in the statistics collected at the census of 1872. From these it appears that of the male adult population (not less than fifteen years of age), 426 are employed in professional advocations, such as Government servants, priests, doctors, and the like; 2,109 in domestic service, as personal servants, water-carriers, barbers, sweepers, washermen, &c.; 3,907 in commerce, in buying, selling, keeping or lending money or goods, or the conveyance of men, animals, or goods; 12,275 in agricultural operations; 3,618 in industrial occupations, arts and mechanics, and the preparation of all classes of substances, vegetable, mineral, and animal. There were 557 persons returned as of no specified occupation. Taking the total population irrespective of age or sex, the same returns give 13,234 as landholders, 23,684 as cultivators, and 33,234 as engaged in occupations unconnected with agriculture. The educational statistics, which are confessedly imperfect, show 735 males as able to read and write out of a total male population numbering 37,593 souls. This parganah comprised only 52 villages at the past settlement, and subsequently received 75 from Meerut and other parganahs. It has lost also 3,036 acres of the area by diluvion.

KUMRUDDINNAGAR, a second-class police-station and ghát on the Búrĥ Ganga, in the village of Khánpur in parganah Kithor of the Meerut district, is distant 11 miles from Meerut. The population of Khánpur in 1872 numbered 574 souls. The ghát has a ferry which is well known and much used. The old site of the village was swept away by floods in 1873.

KUTANA, the chief town of the parganah of the same name in tahsíl Bágpat of the Meerut district, is distant 34 miles from Meerut. The population in 1865 was 3,420, and in 1871 was 3,488, occupying 1,057 houses. It is said to have been founded in the time of the Kauravas and Pándavas. About 100 years ago the people of Adilpur, mostly Tagas, were admitted into this village. The Mahájans are the principal inhabitants. There is a police-station here, and some trade in timber and bambus. The Chaukidári Act is in force in Kutána, and in 1873 supported a village police numbering eight men of all grades at an annual cost of Rs. 384. This is met from a house-tax, which in 1872-73 yielded a revenue of Rs. 461, falling at Re. 0-2-0 per head of the population and Re. 0-6-9 per house assessed (1,057). The expenditure during the same year was Rs. 411, which was met from the income and a balance of Rs. 44 from the previous year.

KUTANA, a parganah in tahsíl Bágpat of the Meerut district, is bounded on the north by parganah Ohhaprauli, on the south by Bágpat, on the east by Baraut, and the west by the Jumna. According to the census of 1871 the total area, then, contained 72 square miles and 429 acres, of which 55 square miles and 281 acres were cultivated. The area assessed to Government revenue

amounted to 72 square miles and 427 acres, of which 55 square miles and 275 acres were cultivated and seven square miles and 197 acres were culturable.

A few villages along the banks of the Jumna in this parganah are too high for canal irrigation, and the water is at too great a depth for wells, while sand predominates in the soil. But with this exception the entire parganah presents one uniform soil of rich black loam of surprising fertility. There is very little river-bed land in the Jumna valley. The Eastern Jumna canal with its net-work of distributaries covers almost the entire area. The irrigated area has increased from 9,319 acres to 27,408 acres, of which 8,296 acres are watered from wells. There are still 681 wells, working 702 *lúos*, but the canal is rapidly driving them out of use, and many have now fallen out of repair and been abandoned. The capabilities for well sinking are very good, water being close to the surface, and *kuchha* wells could easily be dug at a very short notice. Altogether the parganah is one of the richest in the district and produces the finest crops. The *Játs* hold 14 whole estates and portions of 17 others; *Rawás*, 3; *Tagas*, 3; and *Brahmans*, 2, while the remainder contain a mixed proprietary. The cultivators, too, are *Játs*, with a small admixture of *Tagas*, *Brahmans*, *Rajpúts*, and other castes. The general history of the past and present settlements and other matters pertaining to the fiscal history of this parganah have already been sufficiently indicated in the district notice. Eight per cent. (3,596 acres) of the total area was transferred during the currency of the past settlement, but only 437 acres fell into the hands of the money-lenders. The *Játs* bought 2,091 acres and sold 1,658 acres. With the exception of nine estates the whole parganah belonged to *Bagam*

Samru (see *SARDHANA*).

The following statement compares the former and present statistics :—

Period of settlement.	Total area.	Barren and revenue-free.	Culturable.	CULTIVATED.			Total assessable.	Land-revenue.	Revenue-rate on cultivated area
				Wet.	Dry.	Total.			
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Rs.	Rs. a. p.
Former,	47,090	8,996	11,376	9,319	17,399	26,718	38,093	87,87	3 4 7
Present,	47,178	5,342	5,893	27,408	8,535	35,943	41,836	99,825	2 12 5

The total population in 1872 numbered 45,561 souls (20,943 females), giving 624 to the square mile. Classified according to religion there were 40,708 *Hindús*, of whom 18,641 were females; and 4,853 *Musalmán*s, amongst whom 2,302 were females.

Distributing the Hindu population amongst the four great classes, the census shows 5,206 Brahmans, of whom 2,338 were females; 231 Rajpúts, including 116 females; 2,362 Baniyas (1,066 females); whilst the great mass of the population is included in "the other castes" of the census returns, which show a total of 32,909 souls, of whom 15,121 are females. The principal Brahman subdivisions found in this parganah are the Gaur (4,407), Bhát, Dakaut, Acháraj, Bohra, Sarwariya, and Chanrasiya. The Rajpúts belong to the Chauhan élan (230), and the Baniyas to the Agarwál (1,130), Saraugi (1,093) and Bishni (139) subdivisions. Amongst the other castes the following have more than one thousand members each:—Kahár (2,548), Ját (13,628), Chamár (4,813), and Bhangi (2,250). The other castes with less than one thousand persons are as follows:—Taga, Máli, Jogi, Hajjám, Barhai, Sonár, Lohár, Kumhár, Bharbhúnja, Juláha, Gosháin, Bairági, Khattri, Chhípi, Nat, Kalál, Khatik, Dhanak, Malláh, Manihár, Rawa, and Sádhi. The Musalmáns are distributed amongst Shaikhs (3,963), Sayyids (133), Mughals (49), and Patháns (245). The remainder are entered without any distinction beyond religion.

The same returns show 45 inhabited villages, of which 8 had less than 200 inhabitants; 7 had between 300 and 500; 13 had between 500 and 1,000; 12 had between 1,000 and 2,000; 3 had between 2,000 and 3,000; and one had between 3,000 and 5,000. The only town with more than 5,000 inhabitants is Surápur, with 5,216 inhabitants.

The occupations of the people are shown in the statistics collected at the census of 1872. From these it appears that of the male adult population (not less than fifteen years of age), 651 are employed in professional avocations, such as Government servants, priests, doctors, and the like; 862 in domestic service, as personal servants, water-carriers, barbers, sweepers, washermen, &c.; 1,073 in commerce, in buying, selling, keeping or lending money or goods, or the conveyance of men, animals, or goods; 7,569 in agricultural operations; 1,722 in industrial occupations, arts and mechanics, and the preparation of all classes of substances, vegetable, mineral, and animal. There were 2,798 persons returned as labourers and 678 as of no specified occupation. Taking the total population irrespective of age or sex, the same returns give 15,219 as landholders, 6,394 as cultivators, and 23,948 as engaged in occupations unconnected with agriculture. The educational statistics, which are confessedly imperfect, show 1,044 males as able to read and write out of a total male population numbering 24,618 souls. In 1840 there were 45 estates settled at Rs. 93,137; in 1841 eight were taken away, assessed at Rs. 25,411; in 1852 eleven estates, assessed at Rs. 19,327, were received, and four estates have since been created by partition, leaving 52 estates, with a revenue of Rs. 87,873, at the commencement of the present settlement. The principal villages of the parganah not having a separate

notice are Lohari with 2,903 inhabitant, and Sádikpur-Sanauli with 2,620, mostly inhabited by Játs.

LÁWAR, a large village in parganah Meerut of the Meerut district, is distant 12 miles north of the civil station. The population in 1865 was 4,840, and in 1872 was 2,784. It was the head of a *tappa* containing 45 villages including Phalanda, and is said to have been wrested from the Rajpúts by Mír Surkh, a native of Mazenderan. There is a fine house here called Mahal-sarái, built about 1700 A. D. by Jawáhir Singh, Maháján, who constructed the Súrj Kand near Meerut. The gardens attached to it are in ruins. At Dádri, in the neighbourhood, was formerly a fortress of Nain Singh, the Gújar chieftain. It had fallen into ruin, and the line of railway now runs over the site.

LONI, a town in the parganah of the same name and tahsíl of Gháziabad in the Meerut district, is distant 29 miles from Meerut. In 1865 the population was 3,810, and in 1871 was 4,088, occupying 856 houses. The name is derived from its being the centre of a salt tract, in Sanskrit '*lavana*,' and in Hindi '*lon*.' Shaháb-ud-dín Ghori plundered the town and ejected the Rajpúts, who were in possession, putting in their place a body of Mughals, Patháns, and Shaikhs. From that time the Mughals and Patháns have been the zamíndárs of the surrounding land which once belonged to Prithiráj, the Chauhán ruler of Dehli. The remains of his fort are still visible. Up to the time of Muhammad Sháh, emperor of Dehli, there was an old broken-down fortress of the Hindu period here, called *Subkaran Raja-ki-garhi*. Muhammad Sháh razed this fort and used the bricks to build a grove and tank about 1789 A.D. To water this grove it is said that the Jumna canal was dug, though never brought into use. At Uldipur is a fine grove planted by Zinat Mahál, wife of Bahádur Sháh, king of Dehli. It is surrounded by a brick-built wall, and a sarái is built close to it. The gates are five, and in the grove is a scarlet domed *báradari*. It was confiscated after the mutiny and sold to Shaikh Iláhi Baksh of Meerut. The Kharanji Bágh too was built by Zinat Mahál, and after the mutiny bought by Shaikh Iláhi Baksh. At Loni is the Bágh Ranap, built by the wife of some Dehli emperor about 400 years ago. The walls are brick built, but in ruins, and the place is now cultivated by some Gújars. There are two famous wells at Bhaunja and Mihman sarái (also called Kot), both built by Gházi-ud-dín. At Kot was a small bágh of great celebrity, with a residence of the Dehli kings. There is now little trace of it. On the boundary of Kela, Jatwára and Bhaunja is a *báradari* where the kings of Dehli are said to have stayed on their way to Agra as the first stage from Dehli. There is a second-class police-station and a post-office in the town. The Chaukidári Act is in force in Loni, and in 1873 supported a village police numbering eight men of all grades at an annual cost of Rs. 384. This is met from a house-tax, which in 1872-73 yielded a revenue of Rs. 367, falling at Re. 0-1-5 per head of the population and Re. 0-8-9 per house assessed

(667). The expenditure during the same year was Rs. 322, which was met from the income and a balance of Rs. 37 from the previous year.

LONI, a parganah in tahsil Gháziabad of the Meerut district, is bounded on the north by Bágpát, on the west by the Jumna river, which separates it from Dehli, on the east by Jalálabad and Dásna, and on the south by the Bulandshahr district. According to the census of 1872 the total area then amounted to 155 square miles and 602 acres, of which 104 square miles and 524 acres were cultivated. The area assessed to Government revenue was set down at 151 square miles and 111 acres, of which 103 square miles and 47 acres were cultivated. Of the remainder 17 square miles and 106 acres were unculturable.

In the southern portion of the parganah the Hindan river, debouching from the uplands, approaches the Jumna previous to their junction some ten or fifteen miles lower down. The *khaddir* lowlying lands along the beds of both rivers intermingle here, and together comprise the greater portion of the area of the parganah. There is a gentle slope, however, from the line of the highlands towards the Jumna, and the upper portions of this differ so widely in character from the lower and both from the uplands that the parganah has been divided into three separate tracts for assessment purposes. The lower river-land is occupied as pasturage by Gújars, who prefer leaving the land under grass and gathering its wild products to bringing it under the plough. This portion of the district, from its proximity to Dehli, suffered much during the mutiny. The Gújars rose and plundered in all directions; their hands were against every man, and every man's hands against them. Whole estates are even now only slowly recovering the destruction wrought during that period. The liability to inundation, too, will also long retard its advance in cultivation. The higher river-lands possess good soils with great facilities for well-irrigation. They are almost invariably highly cultivated, producing fine wheat, cotton, and tobacco. In a few places where canal water can be obtained sugarcane is grown. The upland tract, which at Bágpát, about twelve miles above Dehli, is close upon the Jumna, thence takes a sudden bend to the south-east, joining the high bank of the Hindan near Gháziabad, about ten miles from the Jumna. It thus forms an acute-angled triangle with its base to the north. Along its edges the land is rough and uneven with very light soils, but inland they are of the richest character, with good natural drainage and a plentiful supply of water from the Eastern Jumna canal.

The general history of the past and present settlements and other matters pertaining to the fiscal history of the parganah have been sufficiently indicated in the district notice. There are 130 revenue-paying and three revenue-free estates; of these 31 are held by Gújars, with shares in 13 others; Tagas hold 25 with shares in ten others; Chauháns have eight, with shares in five others; Játs eight, with shares in one

other, and Shaikhs seven with shares in six others. With the exception of a few Musalmán estates the proprietors are also the cultivators. Mr. Forbes observes the difference in character between the Gújars of the uplands and those of the tracts lying along the banks of the Jumna ; in the former case they vie with their Ját neighbours in their cultivation of the land, and in the latter still adhere to the nomadic, predatory habits which have procured for the Gújar the synonym of riever and cattle-lifter. Mr. Forbes attributes this salutary change " to the humanising influence of the canals." Transfers have amounted to 28 per cent., of which 14 are due to private sales, 7 to forced, and 7 to mortgage. Gújars and Tagas have been the largest sellers, and Brahmans and Rajpúts the most extensive purchasers. Káyaths, Sayyids, and Afgháns would appear also to have freely invested in land in this parganah. Irrigation has increased from 7,051 acres at the last settlement to 23,511 acres, of which 16,857 acres are watered from wells and tanks, and 6,654 acres, in the uplands, from canals. Wells have increased in number and are still increasing. Cultivation has also risen from 53,831 acres to 63,408 acres. In the *rabi*, wheat forms 21 per cent. of the total produce from both harvests ; barley, 7 per cent. ; *gojdi* (or wheat and barley) 17 ; and gram, 6. In the *kharif*, sugarcane is given as but one per cent. ; cotton, 7 ; maize, 4 ; *chari*, 5 ; and *joár* and *bájra*, 23. The cultivation of sugarcane and the species (*paunda*) grown for eating, and vegetables for the Dehli market is extending. The following statement compares the results of the former and present settlements :—

Period of settlement.	Total area.	Barren and revenue-free.	Culturable.	CULTIVATED.			Total assessable	Land-revenue.	Revenue-rate on cultivable area.
				Wet.	Dry.	Total.			
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Rs.	Rs. a. p.
Former, ...	96,145	21,469	22,447	6,766	45,463	52,229	74,676	76,878	1 7 6
Present, ...	Khádir, ...	16,362	2,373	3,405	3,692	6,892	10,584	13,989	95.261
	Bángar, ...	83,440	13,631	18,514	19,243	32,052	51,295	69,809	

According to the census of 1872 parganah Loni contained 118 inhabited villages, of which 40 had less than 200 inhabitants ; 36 had between 200 and 500 ; 27 had between 500 and 1,000 ; 9 had between 1,000 and 2,000 ; 3 had between 2,000 and 3,000 ; and one had between 3,000 and 5,000. The towns containing more than 5,000 inhabitants were Gháziabad with 7,365 inhabitants, and Shahdara with 7,257 inhabitants. The total population in 1872 numbered 66,145 souls (30,066 females), giving 424 to the square mile. Classified according to religion there were 52,725 Hindus, of whom 23,803 were females ; 13,411 Musalmáns,

amongst whom 6,258 were females ; and 9 Christians. Distributing the Hindu population amongst the four great classes, the census shows 5,807 Brahmans, of whom 2,692 were females ; 2,521 Rajpúts, including 1,129 females ; 4,372 Baniyas (2,051 females) ; whilst the great mass of the population is included in "the other castes" of the census returns, which show a total of 40,055 souls, of whom 17,931 are females. The principal Brahman subdivisions found in this parganah are the Gaur (5,029), Bhat (122), Sarasút (31), Dakaut (109), Acháraj (161), Gujráti, Chaurasiya, Dasa, and Sarwariya. The Rajpúts belong to the Chauhan (1,990), Tonwár (249), and Gahlot clans, and the Baniyas to the Agarwál (3,935), Sarangi (357), and Gadariya subdivisions. The other castes having more than one thousand members each are the Taga (4,462), Hajjám (1,115), Ját (2,078), Chamár (11,031), Bhangí (2,607), and Gújar (9,839). Those with less than one thousand members are the Máli, Jogi, Garariya, Kahár, Barhai, Sonár, Lobár, Kumhár, Bharbhúnja, Dhúna, Juláha, Gosháin, Alír, Bairági, Khattri, Káyath, Chhípi, Dhobi, Nat, Lodha, Khatik, Agariya, Malláh, Orh, and Ráj. Musalmáns are distributed amongst Shaikhs (5,771), Sayyids (348), Mughals (323), and Patbáns (1,114) ; the remainder are undistinguished.

The occupations of the people according to the census of 1872 show that 447 male adults were employed in professional avocations ; 2,913 in domestic service ; 2,144 in commerce ; 10,049 in cultivating the soil ; 3,279 in the mechanical arts and manufactures, whilst 3,220 were returned as labourers and 447 as of no specified occupation. The callings of the total population show 15,142 as landowners, 14,474 as cultivators, and 36,529 as engaged in occupations unconnected with agriculture. The educational statistics only give 1,211 males as able to read and write out of a total population numbering 36,079 males. In 1809 Bágpát, Loni, Chhaprauli, and Phugána formed one tahsíl. At Sir H. Elliott's assessment Loni comprised 106 villages ; then came the first revision, adding eight and taking away two villages. In 1853 two villages were transferred to Jalál-abad and the remainder to Dehli. The parganah was restored in 1859 with 130 villages, forming 132 estates, viz., 104 out of the 110 which had been taken and 26 new villages formerly belonging to Dehli. The parganah at present contains 129 villages and 132 estates. The difficulty in tracing out the past fiscal history of any tract can readily be imagined when Loni is only a very common example of the total disruption of old landmarks perceptible in almost every parganah in these Provinces. The places of note not mentioned separately are Jhal-

Notable places.

mala, with a ruined sarái, said to have been built by a *fakír* ; Mandola, a good sized village, inhabited by Tagas, and said to have been built by one Mán Datt Rikhi. At Behta Hájipur is the dargáh of Abdallah Shah and a mosque built by Aurangzeb where a fair is

held every year. Lál Khán's sarái at Mahroli, the Trigonometrical Survey tower (*jarhgaj*) at Aurangabad, and Farrukhsiyár's sarái at Farrukhnagar are the only other objects of interest in the parganah.

MAU, a village in parganah Meerut, is distant eight miles from Meerut. The population in 1872 numbered 999 souls. It has a second-class police-station.

MAWANA or Mawána Kalán, a town in parganah Hastinápur of the Meerut district, is distant 16 miles from Meerut as the crow flies. The population in 1847 was 5,271, in 1852 was 6,486, and in 1865 was 6,864. In 1872 there were 6,714 inhabitants, of whom 3,512 were Hindus (1,633 females) and 3,202 were Musalmáns (1,498 females); chiefly Chauháns, Ghosís, and Gadís (Musalmáns), occupying 1,550 houses. The houses are nearly all mud-built; the only exceptions are a few shops in the bazar, which runs from north to south in a narrow winding course. The roadways are well cared for and the main bazar-way is metalled and has saucer-drains on either side. The water in wells

The site. has risen from 18 to 12 feet from the surface since the opening of the Anúpsahr branch of the Ganges canal, which runs through the town land. The town is essentially an agricultural one, and most of the inhabitants are employed in cultivating the extensive lands attached to the town, which occupy an area of 4,581 acres. There is a market on Thursdays and Saturdays. The well water is good, still fever prevails after the rains. As usual, there are numerous excavations full of water which becomes stagnant during the hot season. One of these pools, almost four acres in extent, and which lay within the town site, has recently been filled up. There is a small village school here and a sarái. The tahsili and post-office are situated in a walled enclosure outside the town to the north, and the police-station is in the north-western part of the town near the sweepers' quarter. A large brick-built tank on the Bahsúma road was constructed by one Kesho Dás of Jánsath, and has recently been repaired by a Meerut maháján. On the banks of the ruined Indi tank is a fine old temple built some 300 years ago. Mawána was held in direct management by Government in 1872. It is an old town and was called Mumána, some say from one Mána, a huntsman, and reputed maternal uncle of the Kauravas; others say from one Máshkan, and that the name is merely a contraction for 'Máshkan ke khera.' The original site of the village was on a hill close by, and it was removed to its present position owing to the breaking out of fires, which the inhabitants attributed to supernatural agencies. The Chaukidári Act is in force in Mawána, and in 1873 supported a village police numbering seventeen men of all grades at an annual cost of Rs. 1,044. This is met from a house-tax, which in 1872-73 yielded a revenue of Rs. 2,017, falling at Re. 0-4-9 per head of the population and Re. 1-8-4 per house assessed (1,325). The expenditure during the same year was Rs. 2,036, which was met from the income and a balance of Rs. 2,032 from the previous year.

Cantonment & Environs
of
MEERUT

The map illustrates the geographical layout of Meerut and its immediate surroundings. The central part of the map shows the city of Meerut, characterized by a dense network of streets and buildings. To the north and west, the map shows the districts of Muzaffarnagar and Ghaziabad, respectively. Various villages and hamlets are labeled throughout the region, including Meerut, Muzaffarnagar, Ghaziabad, and several smaller towns. The Ganges River is depicted flowing through the region, and several roads are shown connecting Meerut to other parts of the area. The map is oriented with North at the top, and the title 'Cantonment & Environs of MEERUT' is prominently displayed at the top center.

from a reduction of Mr. K. T. S. Johnson's Plan of Meenal Cantonment, 801-82 supplied by K. T. Atkinson, Esq. in charge of the N. W. P. Gazetteer.

MAWANA, a tahsíl in the Meerut district, comprises the parganahs of Kithor and Hastinápur. The total area, according to the census of 1872, then contained 431 square miles and 138 acres, of which 257 square miles and 259 acres were cultivated. The area assessed to Government revenue was given at 429 square miles and 60 acres, of which 256 square miles and 328 acres were cultivated, 114 square miles and 430 acres were culturable, and 57 square miles and 582 acres were barren. The land-revenue during the same year stood at Rs. 2,66,225 (or with cesses Rs. 2,92,903), falling at Re. 0-15-5 per acre on the total area, Re. 0-15-6 per acre on the area assessed to Government revenue, and Re. 1-9-10 on the cultivated acre. The population numbered 145,496 souls (67,171 females), giving 338 to the square mile, distributed amongst 260 villages. The same statistics show 7 persons insane, 8 idiots, 23 deaf and dumb, 360 blind, and 65 lepers in the tahsíl. All other matters pertaining to the history of the Mawána tahsíl have been given under the district notice or separately under each parganah.

MEERUT (Mirath), the chief city of the district and division of Meerut, is situated in the upper duáb, in north lat. $29^{\circ}-0'-41''$ and east long. $77^{\circ}-45'-3''$. The elevation of the stone bench-mark imbedded in the north-west corner of the churchyard is 731.46 feet above the level of the sea; that of the second bench-mark imbedded in the churchyard near the western wall by the entrance is 735.47 feet, and that of a cross mark on the surface of the stone slab opposite the north pillar of the central west doorway is 739.30 feet above the level of the sea. Under the name Meerut are included the bazars of the cantonments as well as the city and its suburbs. The city proper lies to the south of the cantonments and to the east of the Meerut city station of the Sindh, Panjáb, and Dehli Railway. The city was originally surrounded by a wall and a ditch pierced by nine gates, of which eight are of some antiquity and one is comparatively new. They

The city. are the Dehli, Chamár, Lihsári, Shoráb, Sháh Pír, Burhána, Khairnagar, Kamboh, and the Bágpat gate of recent origin. The Chamár gate is situated in the ward of that name. The Lihsári gate derives its name from the village of Lihsári to the south of Meerut. The Sháh Pír gate is close by the *makbura* of a Musalmán of that name. The Khairnagar gate was built by Nawáb Khairandesh Khán, and the Kamboh gate by Abu Muhammad Khán Kamboh. There are 38 muhallas or wards in the city, the names of which for the most part explain their position, or the caste of the inhabitants, or are taken from some remarkable person living there or some noted place within them. They are: (1) Bírucháh or Bírú's well; (2) Cháh Godha Bhat; (3) Cháh Miumúran or masons' well; (4) Khari Kúa or saline well; (5) Thaterwára or the brass-founders' quarter; (6) Játiwára; (7) Chhípiwára or calico-printers' ward; (8) Topchiwára or gunners' quarter; (9) Bhatwára; (10) Paryawára; (11) Mahájauwára; (12) Moripára;

The muhallas.

(13) Swámipára ; (14) Khairnagar ; (15) Dálampura ; (16) Kotla ; (17) Kánungoyán ; (18) Smithganj, from the Collector of that name, by whom it was built in 1825 ; (19) Bazar Kohna, the oldest in Meerut ; (20) Shah Nathan, after a *fakír* of that name who died here ; (21) Karam Ali ; (22) Nakáarchiya tola ; (23) Jatán ; (24) Ráizádagán ; (25) Darodgarán ; (26) Khandak Kaharán ; (27) Sabúngarán ; (28) Bába Kháki, from a *fakír* of that name ; (29), Kamángarán ; (30) Sarái Zinat, called after Begam Zinat of Lucknow ; (31) Sháh Pír ; (32) Sarái Bahálim ; (33) Mashái Khán ; (34) Bani Sarái ; (35) Holí Muhalla ; (36) Naugaza ; (37) Zabidiyán ; and (38) Khishtpazán or brick-makers' quarter. There are ten bazars :—Kohna, Antarám, Pahra, Guzári, Lála bazar, Mirza bazar, Smithganj, Wylieganj, built in 1855 ; Sapteganj, built in 1860 ; and Mandi. There are six saráis, four inside the walls and two outside. Smithganj, which combines in itself, a muhalla, a bazar and a sarái is the largest.

Amongst the remains of former times in and around Meerut may be noticed the Suraj kund, commonly called by Europeans 'the monkey tank.' It was constructed by Jawáhir Mal, a wealthy merchant of Lávár, in 1714. It was intended to keep it full of water from the Abu Nála, but at present

the tank is nearly dry in May and June. There are
 Places of note. numerous small temples, dharmshálas and *satí* pillars

on its banks, but none of any note. The largest of the temples is dedicated to Manohar Náth, and is said to have been built in the reign of Sháhjahán. The Baleswarnáth temple is the oldest in the district and dates from before the Musalmán invasion. The Maheshwar temple is also an old one, and its construction is popularly attributed to some of the direct descendants of the Pándavas. The tank called Táláb Mátawála was built in 1714 by Lála Dayál Dás, a Káyath merchant. It has now silted up and only the walls remain. The dargáh in the Nauchandi muhalla is said to have been built from the remains of an old temple pulled down by Kutb-ud-dín. The dargáh of Sháh Pír is a fine structure of red sandstone, erected about 1620 A.D. by Núrjahán, the wife of the Emperor Jahángír, in memory of a pious *fakír* named Sháh Pír. An *urs* or religious assembly is held here every year in the month of Ramazán. The dargáh is supported from the proceeds of the revenue-free village of Bhagwánpur. The Jámah Masjid is said to have been built in 410 *Hijri* (1019 A.D.) by Hasan Mahdi, vazír of Mahmúd Ghaznavi, and was repaired by Humáyún. The remains of a Buddhist temple have recently been discovered near this spot. The dargáh of Makhdum Sháh Wiláyat is situated near the Collector's office. Some say that the dargáh was built by Shaháb-ud-dín Ghorí ; others again say that Makhdum Sháh Wiláyat was the son of the Gherian conqueror who died at Meerut and was buried here by his father. The *makbira* (or mausoleum) of Abu Muhammad Kamboh was built by his family in 1658 A.D. The *makbira* of Salár Masaúd

Ghází is attributed to Kutb-ud-dín Aibák in 1194 A.D. The *makhira* of Abu Yár Muhammad Khán is said to be 300 years old. The *karbala* was built at the beginning of the last century. There are two large imámbarahs,—one near the Kamboh gato and another in the Zahidi muhalla, and an *idgáh* on the Dehli road was built about 1600 A.D. There is a mosque built by Nawáb Khairandesh Khán in the Saráiganj, and besides those already mentioned there are sixty-six mosques and sixty temples in the city, none of which, however, deserve any particular notice. Amongst the recent buildings the tahsil and police-station are remarkably good. A debating society was established in 1868, and in 1870 a fine house was erected for its meetings in Sapte's bazar.

The population of Meerut city in 1847 was only given at 29,014. In 1853

Population. more correct returns showed 40,276 exclusive of cantonments, which were given at 41,759. A rough calculation

made in 1860 reduced the cantonment population by one-half, due in a great measure to the mutiny, when numbers of the inhabitants were ejected, whilst others who had taken refuge in flight on account of their participation in the mutiny reduced the numbers. The population of the city and cantonments is given at 79,378 in 1865. For 1872 we have fuller statistics, and these give a population of 81,386 for both city and cantonments, of whom 47,606 were Hindus (21,136 females), 33,532 were Musalmáns (16,092 females), and 248 were Christians (123 females), exclusive of the military. Ninety-seven are shown as Bengális, 125 as Panjábis, and 12 as Afgháns. There were 14,598 enclosures in the city and cantonments, of which 8,702 were occupied by Hindus, 5,851 by Musalmáns, and 42 by Christians. There were 13,951 houses, of which 7,986 were built with skilled labour, and of these 3,185 were occupied by Musalmáns and 11 by Christians. Of the remaining 10,965 mud-built houses, 4,469 were occupied by Musalmáns and 48 were occupied by Christians. Distributing the population amongst the rural and urban classes, we find 694 persons returned as land-owners, 2,475 as cultivators, and 78,217 persons pursuing avocations unconnected with agriculture. Taking the male adult population (exceeding fifteen years of age) numbering 29,349, we find the following occupations pursued by more than fifty members each:—Bakers (82), barbers (415), beggars (566), blacksmiths (84), braziers (91), bricklayers (370), butchers (254), carpenters (250), carpet-makers (87), cart-drivers (138), cooks (141), confectioners (139), contractors (97), cotton-cleaners (114), cultivators (972), doctors (76), dyers (102), fishmongers (89), flower-dealers (224), fruit-sellers (85), goldsmiths (190), gold-lace makers and wire-drawers (71), Government servants (157), grain-dealers (135), grasscutters (209), grain-parchers (85), grocers (63), grooms (216), herdsmen (59), labourers (4,501), lac-workers and sellers (55), land-owners (320), leather-dyers (92), lime-sellers (66), merchants (286), cloth-sellers (262), milk and butter-sellers (249), money changers (90), money-

lenders (121), oil-makers (154), painters and varnishers (143), pandits (247), pedlars (109), petty dealers (62), porters (load-carriers) (159), potters (137), priests (139), purohits (61), schoolmasters (75), servants (8,974), shopkeepers (2,526), shoemakers and sellers (353), singers and musicians (179), sweepers (671), tailors (600), tobacco-sellers (69), vinegar-sellers (185), washermen (356), water-carriers (446), weavers (984), and wood-sellers (95).

Though there is a considerable trade in Meerut, it is not essentially a trading centre, and cannot rank in this respect with Hâthras and Khûrja. Since the opening of the railway from Ghâziabad, in February, 1867, and through Meerut to the Panjâb in January, 1869, trade has improved, but to no great extent. The only trade returns that we possess are those relating to the octroi, and these only refer to the city proper, and do not include the equally important trade in cantonments. Up to 1868 the Chaukidâri Act was in force in the city, and since then the Municipal Act. The affairs of the municipality are now managed by a committee of fifteen members, of whom five are official and ten are elected by the tax-payers. The income is derived from an octroi impost, which in 1872-73 fell at Re. 0-8-3 per head of the city population. The following statement shows the income and expenditure of the municipality for three years, and the succeeding statement shows the quantity or value of the imports for two years. In 1873-74 the population of the city was estimated at 51,991 souls, giving an incidence of taxation amounting to Re. 0-10-10 per head :—

Receipts.	1871-72.	1872-73.	1873-74.	1874-75.	Expenditure.	1871-72.	1872-73.	1873-74.	1874-75.
	Rs.	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	Rs.
Opening balance, ...	8,536	11,285	3,269	8,892	Collection, ...	4,070	4,031	2,567	2,312
Class I.—Food and drink, ...	24,637	19,064	18,241	18,062	Head-office, ...	1,517	1,025	200	192
" II.—Animals for slaughter, ...	1,417	2,083	2,825	2,772	Original works, &c., ...	1,446	7,790	4,509	3,268
" III.—Fuel, &c., ...	3,247	4,095	6,474	5,528	Repairs, &c., ...	4,403	5,252	6,180	7,268
" IV.—Building materials, ...	1,382	1,108	930	1,051	Police, ...	12,024	11,901	13,887	11,015
" V.—Drugs, spices, ...	978	233	977	771	Education, ...	300	460	480	480
" VI.—Tobacco, ...	...	...	3,321	4,107	Conservancy, ...	3,201	4,710	9,659	10,200
" VII.—Textile fabrics, ...	...	...	500	450	Charitable grants, ...	500	543	990	711
" VIII.—Metals, ...	8, ...	...	...	...	Road watering, ...	1,081	260	...	...
Total octroi, ...	...	...	...	...	Lighting, ...	830	732	740	800
Rents, ...	...	...	...	...	Parks and gardens, ...	...	10	103	123
Fines, ...	...	...	61	135	Extraordinary, ...	...	300	...	385
Pounds, ...	...	...	...	105	Miscellaneous, ...	514	300	480	500
Extraordinary, ...	140	204	...	...			
Fairs, ...	...	91	...	...			
Miscellaneous, ...	4,381	913	3,725	5,410					
Total, ...	41,176	43,702	45,467	53,337	Total, ...	29,801	40,431	37,865	38,190

Statement showing import of taxable articles for two years into the Meerut Municipality.

Articles.	NET IMPORTS IN				CONSUMPTION PER HEAD IN			
	1873-74.		1874-75.		1873-74.		1874-75.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Mds.	Rs.	Mds.	Rs.	M. s. c.	Rs. a. p.	M. s. c.	Rs. a. p.
Grain, ...	255,361	...	244,650	...	4 36 6	...	4 28 2	...
Sugar refined, ...	5	...	11	...	...	...	0 0 1	...
Ditto unrefined, ...	30,520	...	28,992	...	0 23 7	...	0 22 1	...
Ghi, ...	5,178	...	5,141	...	0 3 15	...	0 3 15	...
Other articles of food,	36,707	17,157	42,205	19,820	besides 51,415 bundles <i>pán.</i>	...	besides 57,123 <i>dolls of pán.</i>	...
Animals for slaughter,	...	...	2,772	...	...	...	...	...
			No.					
Oil and oil-seeds, ...	14,116	...	11,317	...	0 10 12	...	0 9 7	...
Fuel, &c., ...	34,088	5,915	30,043	6,372	...	0 1 4	...	0 2 0
	loads.		loads.					
Building materials, ...	5,765	2,03,427	4,623	1,11,881	0 3 15	3 14 1	0 3 9	2 2 5
Drugs and spices, ...	858	37,921	811	4,6218	0 0 10	0 11 8	0 0 10	0 14 3
Tobacco, ...	8,394	...	6,454	...	0 6 7	...	0 4 15	...
European and native cloth.	...	2,05,300	...	2,60,982	...	3 15 2	...	5 0 4
Metals, ...	...	23,353	...	29,039	...	0 7 2	...	0 8 11

In the cantonments there are five bazars : the Lál-kurti (infantry), Topkhána (artillery), Regiment (English cavalry) and Risáláh (Native cavalry). The Meerut Church, begun in 1819

Cantonments.

and completed in 1821, is the most important structure of modern date. It is built of brick and stucco, and is 150 feet long, 84 feet wide, and being galleried all round can contain 3,000 persons. It has a handsome high spire and its appearance is striking. The expense of the building was partly defrayed by subscription and partly by a grant from Government. Amongst the subscribers was Begam Sumru. There is also a Roman Catholic Church, which has recently been enlarged, and a Mission Chapel built by Begam Sumru. The Mission Church was completed in 1869. In connection with it is the Meerut Asylum, supported by the European residents, for the relief of Europeans and Christians in distress. The Meerut Mall is considered one of the finest drives in India. The Wheeler Club is situated on the Mall and was opened in 1863. The offices of the Commissioner, Judge and Magistrate lie outside of but close to the cantonments, which contain ranges of barracks for the accommodation of cavalry, infantry and artillery. In 1875 the garrison comprised two batteries of horse artillery head-quarters and two batteries of field artillery, one regiment of European cavalry, one regiment of European infantry, one regiment of native

cavalry and one regiment of native infantry. It is the head-quarters of the Meerut Division, comprising the garrisons at Meerut, Roorkee, Landour, Dehra, and Dehli. The central jail, completed in 1819 and capable of holding 4,000 prisoners, is built on the concentric principle and covers an area of 219 bighas. The district jail lies more to the east. The establishment of a military prison in the town was contemplated at one time, as an experimental measure, with the view of ascertaining the practicability of substituting local imprisonment for the inefficient punishment of transportation, but the idea was, however, abandoned. There is a good theatre and assembly-rooms in cantonments.

Many of the best wells in Meerut were constructed during the Marhatta rule. The water, as a rule, is good and is found at a depth of from eight to fifteen feet from the surface.

The city site is somewhat undulating, but in the suburbs and cantonments the surface is usually level, and hence arises the difficulty that has been found in elaborating an efficient scheme of drainage. The Abu Nāla forms the natural drainage line for both the city and cantonments, and has been deepened of late years to carry off the surplus water from both: but care must be taken lest it be made too deep, for the fall between Meerut and Sarāi Kāzi, where the Abu joins the East Kāli Nadi, cannot be more than a few feet. The principal drain (the Ganda Nāla) has recently been paved with brick and is connected with the Abu Nāla. The latter drainage line has had a large increase of water flowing in it in some places of late years, while in others it is almost stagnant, forming wide pools. This is due almost entirely to the very serious rise of the spring level of the Meerut land during the past few years. A comprehensive system of drainage connected with a realignment of levels which shall prevent the accumulation of stagnant water in such places as the Moriwāra muhalla has recently been taken in hand and has already advanced considerably towards completion. The water in the cantonment wells was analysed in the end of April and the beginning of May, 1867, by Dr. Gage. The wells selected for the purpose were—(1) well $1\frac{1}{2}$ in the Royal artillery lines, used by the men of the artillery: (2) well 101, used by the sick of the artillery: (3) well 23, used by the sick in the infantry hospital: (4) well $11\frac{1}{2}$ in the artillery lines, and (5) well $103\frac{1}{2}$, used by the European infantry for general purposes. Dr. Gage remarks that the prevalent opinion is that “the drinking-waters in Meerut are very good, and that no diseases can be ascribed to their use.” The results of his examination show that the physical properties of the water in all the wells, after passing through filter paper, were unexceptionable with an alkaline re-action. Ammonia and nitrous acid were not detected, and only in one well was there an almost inappreciable quantity of nitric acid. In the samples from all the wells phosphoric acid was precipitated. There were

traces of silica and sulphate of soda throughout ; the sulphate of soda in well (2) registering 2·3. The remainder of the analyses may be tabulated as follows :—

Number of well.	Degree of total hardness.	Degree of permanent hardness.	Grains of oxygen required to oxidise the readily oxidisable organic matter in 1,000 grains of water.	Solids in 70,000 grains of filtered water.	Volatile matters.	Mineral matters.	Earthy salts, &c., insoluble in water.	Lime as carbonate.	Soluble salts.	Chloride of sodium.	Carbonate of soda.
1	10·11	2·027	·00004	16·66	1·26	15·4	11·76	7·7	3·61	0·84	2·6
2	0·12	4·2	·000 8	16·25	1·855	14·35	8·4	7·525	5·95	1·6	·95
3	7·04	2·07	·000037	12·81	1·01	12·2	8·05	7·175	3·15	·525	2·4
4	9·5	2·0	·00006	16·1	3·5	12·6	8·75	·65	3·85	1·6	2·2
5	8·8	3·7	·000072	13·3	1·89	11·41	Vitiated.	Vitiated.	Vitiated.	1·68	·85

The meteorological detailed statements for two years are given under the district notice, and I give here for comparison the average range of the thermometer for the years 1833-34-35, before canal irrigation was introduced, taken from the records of the Medical Department:—

Month.	SUNRISE.		NOON.		3 P. M.		Month.	SUNRISE.		NOON.		3 P. M.	
	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.		Maximum.	Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
January, ...	54	32	73	54	73	55	July, ...	82	75	89	78	90	78
February, ...	60	38	81	57	84	61	August, ...	81	74	91	76	92	77
March, ...	67	47	85	62	88	62	September, ...	84	69	87	76	88	75
April, ...	76	58	97	72	97	73	October, ...	73	55	84	70	85	71
May, ...	89	71	97	88	100	88	November, ...	63	45	75	65	76	66
June, ...	90	74	101	77	102	78	December, ...	58	38	66	55	67	56

The following description of the climate and health of Meerut in 1838 by Dr. J. Murray is reproduced for the same reason:—"Meerut is considered one of the most healthy stations in India. The average mortality during the last four years has been 2½ per cent. amongst the Europeans and ¼rd per cent. amongst the natives. The climate passes through great changes in temperature and humidity, but these are generally gradual and regular. The weather for five months, viz., from October to April, is delightfully cool and invigorating. The prevailing winds are westerly and northerly, with little rain. In January the ground in the mornings is frequently covered with hoarfrost. Woollen clothing and fires

are found necessary to comfort. In November and March the direct rays of the sun are very powerful, yet this is the most healthy season of the year ; the diseases are of an inflammatory nature and the fevers are intermitting. Hepatic disease, with a strong tendency to abscesses, is common during this period. In April the hot westerly wind commences : at first it begins in the afternoon and ceases at sunset, afterwards in the morning, and continues during the greater part of the night. It ceases in June. During this season there are occasionally typhoons—strong gales, from the north-west, coming on suddenly, carrying before them clouds of dust and leaves, accompanied by lightning and thunder, frequently terminating in rain, and leaving the air very cool and refreshing. During this season the lightest clothes are necessary for comfort. Most houses and the barracks and hospitals are kept cool by means of tattis, whilst the circulation of air is kept up in the rooms by punkahs during the day and occasionally during the night also. These expedients do not agree with all people even when well, and I have seen decided bad effects from them, in diseases induced by checked perspiration. By means of tattis and punkahs, and keeping in the house during the day, this season passes not unpleasantly, especially as, though hot and relaxing, it is not generally unhealthy. Many who have suffered severely from rheumatism, remittent fever, and spleen enjoy better health than during any other period of the year. Fruit is abundant, as strawberries, loquats, peaches, apples, grapes, mangoes, &c. These eaten in an unripe state, combined with imprudently sleeping behind tattis or in the open air, are frequent causes of dysenteric complaints ; inflammation, intermittent fevers, and acute hepatic attacks are also common from exposure to the sun. Convalescence is less rapid than during the cold season. Towards the end of June the winds become variable and the weather close and cloudy, with occasional showers in the intervals, between which it is extremely oppressive, hot and damp. The regular rainy season then sets in, and it rains with little intermission, and continues pretty cool till the beginning of September ; during this month it is cloudy, with little wind, and occasionally extremely hot and exhausting : this is the most unhealthy season of the year. Dysenteric attacks are frequent, and typhoid, intermittent or remittent fevers very common, particularly amongst the grass-cutters, whose occupation exposes them to unhealthy alluvial exhalations. In October, though the days are very hot, the nights gradually become cool and pleasant ; the changes of temperature are considerable, and they are much felt by those whose constitutions have been debilitated by the previous hot and rainy seasons : dysentery and remittent fever, of a more asthenic type than at the other seasons, are common ; convalescence is slow during this season. The climate is found to be favourable to many of the diseases induced by residence in other more damp parts of India. Europeans do not often suffer from a first attack of remittent fever, though returns of this disease

occur during the latter part of the rains. The general character of the diseases is asthenic, and, except in hepatic cases, not leaving great organic derangement." The following table shows the rain-fall as registered by the canal authorities in Meerut for a series of years:—

Year.	April.	May.	June.	July.	August.	September.	October.	November.	December.	January.	February.	March.	Total.
1866-67...	...	...	·7	10·6	12·0	1·4	·2	...	...	...	·7	·7	26·30
1867-68...	1·4	1·4	1·7	13·1	21·5	2·3	·9	...	·7	1·4	·9	·3	36·60
1868-69...	1·0	·9	1·0	9·7	...	4	...	...	...	·9	·5	2·4	16·30
1869-70...	...	...	...	6·6	2·6	6·0	1·2	...	·2	...	...	1·6	18·20
1870-71...	1·30	...	13·90	11·00	7·60	4·20	...	...	·40	·70	2·40	...	41·50
1871-72...	·10	3·73	6·85	9·79	5·85	·50	...	...	1·80	3·10	·90	...	32·62
1872-73...	·42	·20	3·07	8·85	8·85	5·90	...	...	·58	·40	...	·90	29·16

From Meerut military routes branch off to all parts of India: by Sihāni to Delhi, 40 $\frac{1}{2}$ miles or three marches; by Bāgpat to Delhi, 53 $\frac{3}{4}$ miles or four marches; by Bahsūma to Bijnor, 38 $\frac{1}{4}$ miles or four marches; by Shāmli to Karnāl, 64 miles or five marches; by Muzaffarnagar to Landour, 118 $\frac{3}{4}$ miles or 11 marches; by Garhmuktesar to Moradabad, 72 $\frac{1}{2}$ miles or seven marches; by Khātauli to Roorkee, 64 miles or five marches; by Sahāranpur to Simla, 214 $\frac{1}{2}$ miles or 19 marches; to Umballa (Ambāla), 133 $\frac{1}{4}$ miles or 12 marches; to Aligarh, 80 $\frac{1}{2}$ miles or seven marches; and to Bareilly, 130 miles or 12 marches. The halting-places will be noted in the alphabetical arrangement of each district within which they are situated.

The people give four derivations for the name Meerut:—(1) Yudhishhira, on becoming king of Indraprastha (Delhi), is said to have given his village of Meerut to Mai (called also Dāra), a distinguished architect, in exchange for a palace and grounds belonging to this man at Indraprastha. Mai called his new possession Mairāshtra, and built the *Andar-kot*, a high brick fortress, existent now. (2) The Jāts allege that Meerut was founded by a colony of their caste belonging to the Mahārāshtra *got*. There is now in the city a Jāt muhalla. (3) Others say that Meerut received its name from forming part of the dominions of Maipāl or Mahipāl, king of Indraprastha; (4) others again say Meerut was in very ancient times called *Mahidant-ka-kehera*. The general history of the town is given in the district notice, and may be very briefly summarised here. Undoubtedly the oldest monument connected with it is the column raised by order of the Buddhist emperor Asoka, in the third century before Christ, and which is now on the ridge at Delhi. It bears the following inscription:—"This pillar was erected originally at

Meerut in the third century B. C., by king Asoka. It was removed thence and set up in the Kushak Shikār palace near this by the Emperor Fīroz Shah, A.D. 1256. Thrown down and broken into five pieces by the explosion of a powder magazine, A.D. 1713-1719; it was restored and set up in this place by the British Government, A.D. 1867." Tradition ally, Meerut was first captured by Salār Masūd in the early part of the eleventh century. Firishta mentions its capture by Mahmūd Ghaznavi in 1019 A.D., from Hardatta, ruler of Baran, Koil and Meerut, who ransomed Meerut for 2,50,000 dinārs and 50 elephants. It was again captured by Kutb-ud-dīn Aibak in 1191 A.D., who built the Jamah Masjid. Tarmsharīn Khān, Mughal, made an unsuccessful attack on the city in 1327 A.D., but it was completely sacked and destroyed by the Mughal Tīmūr in 1399 A.D. In 1788 A.D. Ghulām Kādir held the fort, which was taken by the Marhattas after a severe struggle. Mr. Guthrie, writing in 1805, says:—"Meerut is a ruinous depopulated town and a place of no trade, the average net market duties for four years amount to only Rs. 2,535." It soon, however, began to recover. The walls are now broken every-where and roads have been put in at all points. In some places the remains of the walls are of brick and in others of mud. In 1806 cantonments were first established at Meerut, and in 1808 Major Penson commenced the erection of cavalry and infantry barracks. Since then the cantonments have sprung up to the north-west of the city, and in 1865 contained 35,194 inhabitants, exclusive of Europeans, and in 1872 the returns show 29,395 inhabitants.

MEERUT, a pargana and tahsil in the district of the same name, had, according to the census of 1872, an area of 366 square miles and 290 acres, of which 271 square miles and 636 acres were cultivated. The area assessed to Government revenue amounted to 356 square miles and 351 acres, of which 263 square miles and 546 acres were cultivated; of the remainder 53 square miles and 362 acres were returned as unculturable.

Meerut is the central pargana of the district. Its breadth from east to west is about 23 miles, and its extreme length from north to south about 24 miles. It is almost a square and is compact in shape, except the strip running northwards.

The pargana is bounded on the west by the river Hindan. Fringing this is a belt of lowland, varying in breadth from a mile to a mile and a half, and extending from Kalina on the north to Dhaulāri on the south. Within the last few years this tract has become quite swampy and water-logged, and much cultivated land has had to be abandoned in consequence. *Reh* has at the same time made its appearance. It is curious that in the similar and similarly situated tract in pargana Sardhana further to the north no such deterioration has taken place. Perhaps the reason is to be sought in the fact that canal irrigation in the Meerut pargana approaches close to the edge of the high lands, while in Sardhana canal irrigation

remains at a greater distance from them. The Káli Nadi traverses the whole length of the parganah from north to south. It passes four miles east of the town of Meerut, and is crossed at Gokalpur on the metalled road to Garhmuktesar by an iron bridge. It is here joined by the Abu or Khodára Nala, which runs throughout this parganah from the village of Chakbandi to its junction with the Káli Nadi. The banks of the nadi are low, and swamps have been formed here, and land also has been thrown out of cultivation. The Chhoiya, a small stream running parallel to the Káli Nadi, may be said roughly to form the eastern boundary of the parganah, dividing it from Kithor. This stream conveys a good deal of water in the rains, but is dry at other seasons. The only other physical feature of importance is a sand ridge which enters the parganah at Pabli, and skirting cantonments on the north-east, proceeds in a south-westerly direction to the Saráwa parganah. This is a continuation of the sand ridge in parganah Sardhana.

In such an extensive parganah there is of course a great variety of soils, but it may be said that with the exception of the tract which is within the influence of the sand ridge, and the poor sandy soil which fringes the Káli Nadi on either side, there is little bad land in the parganah. Of a total of 168,045 acres 94,699 are a good firm clay, while 60,158 are more or less light in character, and 13,188, or not quite 8 per cent., are actual *bhár*. The soil is generally of remarkably fine and fertile quality. Water is close to the surface, and kuchcha wells are made at a trifling cost and last well. The Ganges canal passes down the parganah on the west, and the whole tract between the Hindan and the Káli Nadi is more or less completely irrigated from it: 266 maháls out of the 421 in the parganah are returned as receiving water from the canal. But, as in parganah Sardhana and the good parts of Hastinápur, the canal has in a great measure merely superseded the kuchcha wells. Wells water 54,099 acres; canals, 43,819 acres, and jhils, 3,296 acres, or a total of 101,214 acres. Sugar has always been grown largely in many villages of the parganah, but the opening of the Ganges canal has given an immense impetus to the growth of this plant. No less than 10 per cent. of the whole cultivation is under sugar; seven per cent. is sown with cotton and 31 per cent. with wheat.¹

The general history of the past and present settlements are given under the district notice. From them it will be seen that cultivation has increased 12 per cent. and irrigation 138 per cent., while the proportion of irrigation to cultivation has increased from 28 to 60 per cent. The tenures show 201 zamíndári, 166 bháyachára, and 54 pattidári estates. The transfers have been moderate: 41,117 acres were sold by private sale during the currency of the last settlement; 7,869 acres by auction,

¹ Mr. J. S. Porter in 1867.

and 8,370 acres were temporarily mortgaged. In none of these cases except Játauli, Manipur, and a few other villages, can the transfer be attributed to the pressure of the assessment. There have been few balances except, nominally during the famine year, and altogether the landowners and cultivators are very well off,—a result to which the rise in prices, the Ganges canal, and an easy assessment have all more or less contributed. Rents and rent-rates are sufficiently indicated in the district notice, and the data on which the assessment was made are given in the parganah reports published by the Board of Revenue. The parganah formerly contained thirteen tappas—Gaija, Siwál, Púthi, Pabli, Patta, Haweli, Rori, Lávár, Máchara, Sisauli-Mau, Satta, Rasúl-pur Rohta, and Sikhera, but these distinctions have now been entirely lost.

The following statement compares the results of the past and present assessments :—

Period of settle- ment.	Total area.	Barren and re- venue-free.	Cultivable.	CULTIVATED.			Total assessable.	Land-revenue.	Revenue-rate on cultivated area.	
				Wet.	Dry.	Total.				
	Acrea.	Acrea.	Acrea.	Acrea.	Acrea.	Acrea.	Acrea.	Rs.	Rs. n. p.	
Former, ...	235,153	39,689	45,443	42,182	107,539	150,021	195,464	334,557	2 3 8	
Present, {	Khádir,	5,694	1,974	1,196	417	2,108	2,525	3,720	408,905	2 7 3
	Bángar,	228,836	40,208	24,780	99,557	61,291	163,848	188,628		

According to the census of 1872 parganah Meerut contained 284 inhabited villages, of which 35 had less than 200 inhabitants; 92 had between 200 and 500; 95 had between 500 and 1,000; 52 had between 1,000 and 2,000; 7 had between 2,000 and 3,000; and two had between 3,000 and 5,000. The only town containing more than 5,000 inhabitants was Meerut itself, with 81,306. The total population in 1872, including the city and cantonments, numbered 274,899 souls (126,793 females), giving 751 to the square mile. Classified according to religion there were 200,742 Hindús, of whom 91,470 were females; 73,818 were Musalmáns, amongst whom 35,154 were females; and 339 were Christians. Distributing the Hindu population amongst the four great classes, the census shows 19,941 Brahmans, of whom 8,850 were females; 9,451 Rajpúts, including 4,092 females; 17,725 Baniyas (8,005 females); whilst the great mass of the population is included in "the other castes" of the census returns, which show a total of 153,625 souls, of whom 70,523 are females. The principal Brahman subdivisions found in this parganah are the Gaur (15,565), Saraswat (520), Bhát (114), Dakaut (507), Acháraj (116), Kanauiya, Gujráti, Sanádh, Chaurasiya, Dasa, Gangaputr, and Rahiya. The Rajpúts belong

to the Chauhán (4,638), Tonwár (2,126), Badgújar, Dhangar, Panwár, Gahlot, Solankhi, and Mohrawár clans, and the Baniyas to the Agarwál (9,620), Sarangi (1,153), Gadariya (3,130), Bishnoi, Bishni, Raja-ki-barádari, Maheshri, Rastaugi, and Rautgi subdivisions. Amongst the other castes the following have more than 1,000 persons each :—Garariya (2,603), Taga (2,228), Máli (4,870), Jogi (2,116), Koli (4,096), Kahár (6,705), Hajjám (3,339), Barhai (1,871), Sonár (1,676), Ját (24,297), Kumhár (5,703), Chamár (46,640), Bhangí (10,808), Juláha (1,074), Gújar (9,899), Ahír (2,537), Káyath (1,648), Dhobi (1,185), Khatik (2,222), and Lodha (3,940). The following have between 1,000 and 100 members :—Lohár, Bharbhúnja, Gosháin, Bairági, Khattri, Chhípi, Kalál, and Nat. The following show less than 100 members :—Dhúna, Teli, Saisi, Dhanak, Fakir, Kanjar, Malláh, Kúrmí, Bohra, Saini, Rahti, Kamboh, Káchhi Baheliya, &c. Musalmáns are distributed amongst Shaikhs (53,006), Sayyids (2,845), Mughals (955), Patháns (6,515), and the remainder are entered without distinction.

There were 23 insane persons, 10 idiots, 27 deaf and dumb persons, 536 blind, and 50 lepers in the tahsíl during 1872. The occupation statements show that of the male adults in the population 2,542 were engaged in professions, 18,075 in domestic service, 7,112 in commerce, 30,469 in tilling the soil, 16,715 in the mechanical arts and manufactures, while 17,134 are shown as labourers and 3,059 of no specified occupation. Of the total population 29,058 are shown as landowners, 58,283 as agriculturists, and 187,558 as pursuing avocations other than agriculture. The educational returns for the parganah were also collected at the census of 1872. They show that out of a total of 148,106 males only 4,342, or 2·9 per cent., could read and write, and this too including the population of the city and cantonments—a number so small as to clearly show that in this respect the census statistics cannot be trusted. In 1852 Meerut parganah comprised 368 estates, having an area of 280,037 acres; in 1853 these were reduced to 323 estates, with an area of 241,263 acres.

MURÁDNAGAR, a large village in parganah Jalálabad and tahsíl Gháziabad of the Meerut district, lies a little more than 18 miles from Meerut. The village comprises the two old villages of Sárna and Murádnagar. The inhabitants of Sárna are exclusively Tagas, and in Murádnagar they are now found in greatest numbers. Murádnagar was founded by Mirza Muhammad Murád, Mughal, about 300 years ago, whose mausoleum still exists near the town. In 1865 the population was 4,263, and in 1872 was 4,769, occupying 1,020 houses. The founder built a brick sarái here, which is now Government property, and a school is carried on in it. The tahsíl was transferred to Gháziabad in 1859. There is a police-station and a post-office here. The Chaunkidári Act is in

force in Murádnagar, and in 1873 supported a village police numbering ten men of all grades at an annual cost of Rs. 480. This is met from a house-tax, which in 1872-73 yielded a revenue of Rs. 541, falling at Re. 0-1-9 per head of the population and Re. 0-11-0 per house assessed (782). The expenditure during the same year was Rs. 433, which was met from the income and a balance of Rs. 59 from the previous year.

MUZAFFARNAGAR SAINI, a station of the Great Trigonometrical Survey, is situated in parganah Hastinápur of the Meerut district, in lat. $29^{\circ}-2'-21''$ and long. $77^{\circ}-49'-50''$, at an elevation of 831.6 feet above the level of the sea. The upper mark-stone of the survey is fixed on a very high mound of ruined and broken bricks, probably the remnants of a ruined redoubt, in the midst of the village of that name, and 5.4 miles north-east of Meerut. The population in 1872 was only 911. Saini was by common report the great gate of Hastinápur, and the base of the mound on which it is built is clearly masonry, above which the layers of brick are still visible.

NILOHA, a village in parganah Hastinápur of the Meerut district, lies at a distance of about 13 miles from the civil station, close to the Bijnaur road. The population in 1865 was 2,434, and in 1872 was 2,840. Eighteen biswás of the village belong to the Landhaura estate and two biswas to the Játs. The name of the village in which Niloha is situated is Bhaisa, on the Anúpsahr branch of the Ganges canal. Niloha was founded by a Ját named Nihál, who emigrated from Salárpur, where a mound or khera now marks the site of the original village. In the month of Sáwan a fair is held here in honour of Goga Pír. The market day is Sunday.

NIRPURA, a large village in parganah Barnáwa and tahsíl Sardhana of the Meerut district, is distant 25 miles from Meerut. In 1865 the population was 4,657, and in 1872 was 4,995, principally Játs and weavers. It is noted for the good blankets made there. There is a fair held every year called the Mela Chári Khwájah Ajmer.

NIWARI, a village in parganah Jalálabad, with 3,503 inhabitants, is distant 13 miles from Meerut. It has a police-station.

NIZAMPUR, a village of parganah Hápur of the Meerut district, is distant 20 miles from Meerut. The population in 1872 was 243. There is an outpost of police here.

PARYCHHATGARH, a town in parganah Kithor and tahsíl Mawána of the Meerut district, lies half way between Mawána and Kithor, at a distance of 14 miles from Meerut on the road to the Kumruddínagar ghát on the Ganges. The population in 1865 was 4,894, and in 1872 was 4,810, chiefly Tagas, Baniyas, and Brahmans, occupying 1,003 houses. The greater part of the site is well raised and drains into a large excavation to the south, and others to the east and north. On the highest point in the centre of the town are the brick fort

of the former Raja Nain Singh, and adjoining it his family residence, both of which are still in good repair. The fort claims a hoary antiquity. Tradition ascribes its building to Parikhsit, the grandson of the Pándava Arjuna, who was also the founder of the town, in consequence of which the name *kila* or 'fort' is often given to the town to the present day. The fort remained untenanted until the rise of the Gújar power in the last century, when Raja Nain Singh repaired and strengthened it, substituting sun-dried bricks for burnt-bricks, so that the restoration can easily be traced. The fort was dismantled in 1857 and is now used as a police-station. The *chaupál* on one side of the residence of the Raja has been utilised as a school. The houses of the people,

The site.

chiefly of mud, with a few of brick, congregate around the fort; the Baniya and trading quarter lies to the west, and the quarter of the Chamárs and sweepers to the east. From the school a paved street runs to the south of the town, and towards the centre of this street another street turns off to the bazar on the west. The bazar contains many fair shops, some double-storeyed, and altogether presenting a more prosperous appearance than one could expect in a town of this kind. The water in the wells is good and the public health is excellent. A market, much frequented by the people of the neighbouring villages, is held every Monday. The water of the Newaldeo well near the Raja's residence is much praised: it is said to have been built in the time of the Pándavas, and is drunk by people from all parts as a specific for leprosy. In the early days of British rule Parichhatgarh was the head-quarters of a tahsíl establishment. The Anúpsahr branch of the Ganges canal runs close to the town and irrigates a portion of the town land. There are falls on the canal here, and a canal bungalow, a district post-office, and a police-station. The Chaukidári Act is in force in the town, and in 1873 supported a village police numbering eight men of all grades at an annual cost of Rs. 522. This is met from a house-tax, which in 1872-73 yielded a revenue of Rs. 899, falling at Re. 0-2-11 per head of the population and Re. 0-15-5 per house assessed (930). The expenditure during the same year was Rs. 1,025, which was met from the income and a balance of Rs. 235 from the previous year. A small sum has been expended in works of improvement and in conservancy.

PATPARGANJ is an old village in parganah Loni and tahsíl Gháziabad of the Meerut district, about a mile from the Jumna and 31 miles from Meerut. About three-quarters of a mile from the village site is the spot marked out by a surrounding ditch, where in 1803 the battle of Dehli was won by Lord Lake against the Marhattas, commanded by Bourquien, a French adventurer. There is a monument on the spot to the memory of Colonel Sanguine and others who fell. The Chaukidári Act is in force in Patparganj, and in 1873 supported a village police numbering two men at an annual cost of Rs. 96. This is met

from a house-tax, which in 1872-73 yielded a revenue of Rs. 160, falling at Re. 0-2-5 per head of the population and Re. 0-10-2 per house assessed (250). The expenditure during the same year was Rs. 148, which was met from the income and a balance of Rs. 16 from the previous year. The population in 1872 was 1,036, occupying 251 houses.

PHALAUDA, a town in the Mawána tahsíl of the Meerut district, is distant 17 miles from Meerut. The population in 1865 was 4,700, and in 1872 was 4,697, composed of Baniyas, Mírs (Musalmáns), Bishnois (46 houses), &c. It is said to have been founded by Phalgu, Rajpút of the Tonwár or Tuár clan, and his descendants were in possession of the village up to the time of the advent of the Musalmáns. The story runs, that in times past a Musalmán named Mír Surkh, a native of Mazendaran, came with a body of freebooters and desired to settle in Phalauda village. They were afraid of the Rajpúts and resolved, if possible, to get rid of them. A Brahman was bribed by Mír Surkh,

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who was induced to explain all the usages of the Rajpúts. Mír Surkh then withdrew and awaited his opportunity till the Rajpúts went to Batnaur, on the then stream of the Ganges, to bathe on the last day of the month (*puranmáshi*) of Kárttik. Mír Surkh then got numberless pálkis or palanquins, armed his men, closed the doors, and had them transported to Batnaur as native ladies. On arriving there the Phalauda Rajpúts were in the water unarmed. The páلكi doors were then thrown open and Mír Surkh's men went armed into the water and put all the Rajpúts to death. He then seized on Phalauda and other villages, and incorporating with them his former villages constituted all (45 in number) the tappa of Lávár. To this day the zamíndárs of Phalauda are Mírs. At Phalauda is the dargáh of Kutb Sháh fakír, where an *urs* or religious fair is held every year. Kutb Sháh was the son of Daulat Khán, an Amíl stationed under the Dehli Government at Phalauda, and being born during the fast month of Ramazán refused to be suckled. It was considered to be a sign that the boy would attain to great distinction, and on his growing up this was fulfilled by his becoming a fakír and a great miracle worker. The people of Nagla Katár, a neighbouring village, mostly Mírs, wished to destroy Kutb Sháh's power, and for that purpose invited him to a feast where a roasted cat was served up. Kutb Sháh instantly detected the treachery and restored the cat to life and cursed the people of the village. The people were in consequence visited with sickness and the village went to ruin. For nearly two centuries nobody cultivated the village, nor in 1836 could the Settlement Officer (Mr. Elliot) induce anybody to undertake its cultivation. After that some Játs occupied it at a progressive revenue of Rs. 30. The village is now again in a high state of cultivation, and at the last settlement a land-revenue of Rs. 990 was assessed. No Musalmán will now live in the village, for they say they immediately become sick. The

area of Phalauda is 2,769 acres. There is a vernacular school here and a market on Sundays. There are numerous bāghs or groves of mango trees. The streets are narrow and dirty.

PHAPHÚNDA, a small village in parganah Meerut of the Meerut district, is distant six miles from Meerut. The population in 1872 was only 1,961. It has a police-station.

PILKHUA or Pilkhuwa, also known as Bādshāhpur, a town in parganah Dāsna and tainsil Ghāziabad of the Meerut district, is distant a little over 19 miles from Meerut. The population in 1865 was 4,065, and in 1872 was 6,239, of whom 5,572 were Hindús (2,605 females) and 659 were Musalmáns (303 females). The inhabitants are for the most part Mahájans, Rajpúts, Brahmans, and Chamárs. Except towards the centre, the site of Pilkhua is low, and is connected with the Dehli and Rápur road by a raised and bridged road. To the

The site. west is a large excavation forming a tank called the Kankhali; to the south-east a second, used by the Chamárs in their trade; and close to the Dehli road a new tank is being made by a Baniya narrow lane running from east to west of Sikhara. The principal bazarway runs from north to south from as far as the Kankhali tank. There are about 250 shops in the town, nearly all of which are built of mud. There are about ten bankers and there are two large Hindu temples. The population is a Hindu manufacturing one, and there are very few Musalmáns. Water in the wells was found at 20 feet from the surface in 1872, but in 1874 it had risen to 10 feet. The drainage throughout is imperfect, and much stagnant water collects—a fruitful source of fever and spleen. Indeed, the mortality from fever has been excessive for several years, and in 1874 amounted to 78·2 per thousand of the population. Since the establishment of the municipality, however, much improvement has been effected. The market-place has been raised and metalled and a good entrance to the town from the highroad has been provided. Arrangements have been made to dispose of the overflow from the great water-hole on the west, and a drain has been excavated from the eastern margin of the town in the direction of a small tributary of the Káli, which passes about four miles to the east of the site, and to which a canal escape, now apparently unused, passes just south of Pilkhua. The lands around are partly irrigated from the canal; and distributaries, which impede the outflow of rainfall, exist on all sides of the town, but at a considerable distance from it. There is still much to be done in improving the drainage of the town in the direction of preventing the stagnation of water in the excavations around, before the causes of the great fever mortality in the autumn months can be removed.

In 1872 a municipality was established here, the affairs of which are managed by a committee, of whom three are officials and six are elected by the tax-payers.

Municipality.

The following statement shows the income and expenditure of the municipality for four months of 1872-73 and the entire years 1873-74 and 1874-75:—

Receipts.	1872-73.	1873-74.	1874-75.	Expenditure.	1872-73.	1873-74.	1874-75.
	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.
Opening balance, ...	3,344	3,777	1,469	Collection, ...	230	518	611
Class I.—Food and drink, ...	730	1,727	1,627	Head office, ...	...	36	36
" II.—Animals for slaughter, ...	2	7	6	<i>a.</i> Original works, ...	...	946	1,861
" III.—Fuel, &c. ...	36	178	166	<i>b.</i> Supervision, ...	30	180	...
" IV.—Building materials, ...	15	41	42	<i>c.</i> Repairs, &c., ...	...	2,567	...
" V.—Drugs, spices, ...	69	107	103	Police, ...	291	895	768
" VI.—Tobacco, ...	6	25	28	Education, ...	30	172	174
" VII.—Textile fabrics, ...	256	865	487	Conservancy, ...	72	365	461
" VIII.—Metals, ...	10	37	25	Miscellaneous, ...	88	40	65
Total of octroi, ...	1,124	2,987	2,484	Charitable grants, ...	...	52	130
Rents, ...	47	181	212	Pounds, ...	7	...	...
Fines, ...	5	84	41				
Pounds, ...	4	63	107				
Miscellaneous, ...	...	137	..				
Total, ...	4,524	7,229	4,303	Total, ...	748	5,771	4,106

Statement showing import of taxable articles for two years *Pilkhua*.

Articles.	Net imports in				Consumption per head in			
	1873-74.		1874-75.		1873-74.		1874-75.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity	Value.
	Mds.	Rs.	Mds.	Rs.	Mds. s. c.	Rs. a. p.	Mds. s. c.	Rs. a. p.
Grain, ...	27,312	...	25,667	...	4 16 5	..	4 5 11	...
Sugar refined, ...	3	...	3	...	...	...	0 0 1	...
Ditto unrefined, ...	4,613	...	3,818	...	0 29 9	...	0 24 7	...
Ghi, ...	138	...	212	...	0 1 3	...	0 1 6	...
Other articles of food, ...	6,051	160	4,717	200	...	...	...	...
Animals for slaughter, ...	109 No	...	96 No	...	...	...	...	...
Oil and oil-seeds, ...	797	...	933	...	0 5 2	...	0 6 4	...
Fuel, &c, ...	5,904	...	4,199	...	...	...	...	...
Building materials, ...	...	2,206	...	1,970	...	...	...	0 5 2
Drugs and spices, ...	...	5,360	...	5,040	...	0 13 9	...	0 13 0
Tobacco, ...	292	...	308	...	0 2 0	...	0 2 0	...
European and Native cloth, ...	...	57,451	...	46,538	...	8 5 3	...	7 0 0
Metals, ...	236	...	151	...	0 1 9	...	0 1 0	...

About one hundred looms are worked in the town, and there is a considerable export of coarse cloth. *Chuneris*, a kind of thin cloth dyed in an elaborate manner with spots, are also made for the Dehli market. There is a very large trade in leather and shoe-making. The shoes of *Pilkhua* find their way to Calcutta and Bombay, and the *Chamár* shoe-makers are especially skilful in the mode in which they dye the buff

Manufactures.

and red ornamental portions of their shoes. The green leather is imported from Dehli, where it is made by the Musalmán leather-workers. Mr. Michel of the Masúri factory purchased Pilkhuá and the thirteen neighbouring villages after the mutiny. He is now the landlord and a member of the municipal committee. There is a mud-built police-station and post-office, and two saráis. The school is of masonry and is attended by about 35 pupils. The market-day is Friday.

PÚTH, a parganah in tahsil Hápur of the Meerut district, is situated in the extreme south-eastern corner of the district. It is bounded on the north-east by the Ganges, on the south by the Bulandshahr district, and on the north-west by Garhmuktesar. According to the census of 1872 it then comprised a total area amounting to 64 square miles and 341 acres, of which 37 square miles and 396 acres were cultivated. The area assessed to Government revenue in the same year stood at 63 square miles and 385 acres, of which 36 square miles and 474 acres were cultivated and 13 square miles and 20 acres were returned as unculturable.

There is a large river-frontage in this parganah, and in half this area there is Condition of the par. a considerable proportion of *khádír* or land lying in the ganah. river-bed. Two villages lie wholly within the *khádír* and portions of thirteen others. The portions lying nearest the uplands are fertile and produce good crops of sugar-cane and rice, while those lying on the high bank itself contain some of the poorest land in the district, being much cut up by ravines, and so situated that irrigation is impossible. Another characteristic of the parganah is the existence of sand-drifts or dunes, which, though in many cases fixed, are in others still moving, thus causing sudden and great changes in the distribution of the soils. By the side of a fertile estate with good irrigation may be seen another without any irrigation whatsoever, and with a sandwhelmed soil capable of producing only scanty crops of the poorest kinds. Mr. Porter, in his report, calls attention to the rapidly increasing area occupied by ravines in this parganah, and shows that this ravine area is admirably adapted for the plantation of gardens and fuel reserves. The water-shed drained by these ravines is usually very small, seldom exceeding one square mile in extent. If light embankments were formed around the fields above the head of the ravine, and the ravine itself were divided into plots by small embankments thrown across the narrowest parts of its bed, each field and each plot would absorb its own share of the rainfall, and the plots would at once be ready for ploughing and sowing with *kikar*, *sisu*, and other timber trees. At present the population, including land-owners and cultivators, belong to the least industrious classes in the district, so that wild-pig jungle largely predominates amongst the cultivation. There are instances in the district where this raviny land has been terraced by the Játs, and the richest crops are flourishing on what the Patháns of Púth would call barren waste. Again, the Gújars are interested in the preservation of the waste as affording good pasture-land for their cattle. With the exception of these

khaidir and sandy tracts, the land lying in the interior of the parganah is of fair quality, whilst a few villages are extremely rich.

Irrigation from canals has only recently reached the parganah and is limited in extent, while well-irrigation is not always practicable. The capabilities for wells are confined to a narrow belt, commencing on the southern frontier, and running direct through the centre of the parganah with masonry wells having water at 30 to 35 feet in the beginning, and ending with *kuchcha* wells

with water at 10 to 15 feet. Except a few villages to the south-east, the remainder have very little well-irrigation capability, and some have absolutely none. Of the 54 estates in the parganah, nine are *pattidari*, two are *bhayachara*, and 43 are *zamindari*. Thirty estates are held by *Jats* with portions of 12 others, four by *Rajputs*, and the remainder chiefly by *Musalmans*. The *Jat* holdings are represented by the estates of the *Kuchchesar Raja*, who is one of the least improving landlords in the parganah. Owing to continued litigation and bad management his estates have deteriorated, and there is little hope for improvement under the present incumbent. There are few *Jat* cultivators, and the *Pathans*, from their natural indolence, pride, and extravagance, make as bad cultivators as they are bad landholders. Irrigation has doubled during the currency of the last settlement, but still covers only about one-fifth of the cultivated area, and cultivation has only increased one-fifth. Transfers have amounted to 43 per cent., of which 32 per cent. were by private sale, five by forced sale, and six by mortgage. As a whole, this parganah, though the poorest in the district, is not so flourishing as it might be in the hands of more improving proprietors. Sir H. Elliot, in his *Path* report, said "that his arrangements were made with a view of rendering these transfers less frequent, and he trusted that the timely reduction made to some of the landholders would save their property from the grasp of the *Kuchchesar Raja*;" but in this respect his efforts have been unsuccessful. The cultivating classes comprise *Pathans*, *Chauhans*, *Rajputs*, *Brahmans*, a few *Jats*, *Gujars*, and *Chamars*. Payment of rent in kind, a sign and cause of inferiority of produce, prevails. The *Kuchchesar* villages are usually farmed, and here cash rents frequently obtain. The irrigation details show 273 wells (67 *pukka*) worked by 358 runs for irrigation purposes and watering 3,169 acres; 275 acres were irrigated from tanks and 1,502 acres from the canal, leaving an unirrigated area of 19,133 acres. The settlement statistics, past and present, are as follows:—

Period of settlement.	Total area.	Barren and revenue-free.	Cultivable.	CULTIVATED.			Total assessable.	Land-revenue.	Revenue-rate on cultivated area.
				Wet.	Dry.	Total.			
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Rs.	Rs. a. p.
Former, ...	37,103	6,626	9,646	2,043	18,783	20,831	30,477	40,196	1 14 10
Present, ...	41,282	8,350	8,853	4,946	19,133	24,079	32,932	41,225	1 11 4

The census papers of 1872 show that there were then in the parganah 45 inhabited villages, of which 13 had a population under 200 souls ; 15 had between 200 and 500 ; 10 had between 500 and 1,000 ; 6 had between 1,000 and 2,000, and one had between 2,000 and 3,000. The land-revenue from all sources during the same year amounted to Rs. 40,052 (or with cesses Rs. 44,133), which fell on the total area at 15 annas 6 pies per acre, on the area assessed to Government revenue at 15 annas 9 pies, and on the cultivated area Re. 1-10-7. The total population in 1872 numbered 24,196 souls (11,431 females), giving 372 to the square mile. Classified according to religion there were 19,399 Hindús, of whom 9,056 were females, and 4,797 Musalmáns, amongst whom 2,375 were females. Distributing the Hindu population amongst the four great classes, the census shows 1,921 Brahmans, of whom 917 were females ; 5,249 Rajpúts, including 2,323 females ; 801 Baniyas (379 females) ; whilst the great mass of the population is included in " the other castes " of the census returns, which show a total of 11,428 souls, of whom 5,437 are females. The principal Brahman subdivisions found in this parganah are the Gaur (1,741), Bhít, Dakaut (41), Acháraj (61), and Sarasút. The Rajpúts belong to the Chauhán (3,312), Tonwár (1,267), Badgújar, Ponwár, Jádón, Rána and Solankhi clans, and the Baniyas to the Agarwál (779) and Gadariya subdivisions. The other castes comprising more than one thousand persons each are the Chamár (3,877) and Lodha (1,285) castes. The following have less than one thousand members each :—Máli, Koli, Jogi, Garariya, Kahár, Hajjám, Barhai, Sonár, Ját, Kumhár, Bharbhúnja, Dhúna, Bhangi, Gújar, Gosháin, Ahír, Bairági, Káyath, Kalál, Nat, Khatik, Baheliya, Malláh, Orh, Ghosi, and Khági. Musalmáns are shown under Shaikhs (3,239), Patháns (1,076), Mughals (3), and Sayyids (172) : the remainder are unspecified.

The census statistics show the occupations of all the male adults in the district. For this parganah we find 210 engaged in professions ; 758 in domestic service ; 1,752 in commerce ; 3,838 in cultivating the soil ; 1,063 in the arts and mechanical occupations and manufactures, and 174 are returned as of no specified occupation. For the total population of the parganah the same statistics give 764 as landholders, 10,663 as cultivators, and 12,766 as engaged in avocations unconnected with agriculture. The educational statistics show only 442 out of a male population numbering 12,765 souls as able to read and write. In 1819 Púth-Sayána, Thána Farída and Ahár Malakpur formed a tahsíl known as Púth-Sayána. Thána Farída and Ahár Malakpur were transferred to Bulandshahr in 1824. In 1844 Púth was separated from Sayána and attached to the Hápur tahsíl, and Sayána was transferred to Bulandshahr. One village was added to it in 1853.

PÚTH, a small village in the parganah of the same name and tahsíl of Hápur in the Meerut district, lies about 34 miles from Meerut. In 1865 the population

was 688, and in 1872 was 692. Púth is said to have contained the favourite garden of the Hastinápúr Rajas, by whom it was called *pushpavati*. The Musalmáns have the credit of changing the name to Púth. There is a ferry and a second-class police-station here.¹

PÚTHI, a town in parganah Kithor and tahsíl Mawáua of the Meerut district, is distant about 16 miles from Meerut. The population in 1865 was 2,010, and in 1872 was 2,478, comprising chiefly, Gújars and Tagas. It formed a part of Nain Singh's *jágir*, and *malikána* (or proprietor's allowance) is still paid to his family.

SALÁWA is an old village in tahsíl Sardhana of the Meerut district, about 20 miles from Meerut. In 1872 the population was 3,242. It is situated on the canal, and boasts of a regular bazar with attendant *chaulkráyat* or head-beadle. The agriculturists are mostly Rajpúts, but there are also Játs and Jain Baniyas.

SARÁULI, a station of the Great Trigonometrical Survey, is situated in parganah Sardhana of the Meerut district, in lat. 29°-9'-58" and long. 77°-33'-48," at an elevation of 819·8 feet above the level of the sea. The upper mark-stone of the survey is situated 5·9 miles north-west of Sardhana, 1·5 south-south-west of the village of Ohhúr, 0·7 north-north-east of Gotka; and 1·6 miles east of Bapársi village.

SARÁWA, a town in the parganah of the same name and tahsíl Hápur in the Meerut district, is situated about 13 miles from Meerut. The population in 1865 was 3,713, and in 1871 was 4,163. This town was in 1737 A.D. the Diwánkhána and Tawíla of Raja Dilarám, a follower of Najíb-ud-daula, Rohilla. The son of Raja Dilarám received another *jágir* at Ahmadgarh in Baran (Bulandshahr) from Muhammad Sháh, on which he left Saráwa, and after this the place lost its importance. The village was founded in the time of the Ghori line of kings and was then called Fatohgarh. The name was subsequently changed to Saráwa when the Tagas got possession of it. The word '*sirái*' means 'cultivator,' and when the Taga cultivators made it their own they called it Saráwa, or the cultivators' own village. The inhabitants are Tagas (Musalmáns), Shaikhs and Sayyids. There are two kheras near the village site, named Kharkáli and Jalálpur. There is also an old khera near the village of Atrára in this parganah, called Kithauli, and another at Badnauli.

SARÁWA, a parganah in tahsíl Hápur of the Meerut district, is situated in the centre of the district, a little to the south of Meerut. According to the census of 1872 the total area, then, comprised 76 square miles and 220 acres, of which 56 square miles and 274 acres were cultivated. The area assessed to

¹ The net revenue from the ferry was :—

Rs		Rs.		Rs.		Rs.		Rs.	
1861-62	... 531	1863-64	... 2,025	1865-66	... 1,750	1867-68	... 1,595	1869-70	... 3,100
1862-63	... 178	1864-65	... 1,090	1866-67	... 1,750	1868-69	... 1,750	1870-71	... 3,050

Government revenue amounted to 73 square miles and 617 acres, and of this only seven square miles and 413 acres were returned as unculturable.

Saráwa is a small parganah drained on the east and west by two branches of the Káli Nadi, which are almost altogether dry during the hot season, and are used as escapes for the canal, but are scarcely of any service for irrigation. Along the lines of these channels lie the ridges of sand-dunes, throwing out lateral spurs in all directions and causing much diversity in the character of the soils. The general fiscal history of the past and

Physical features. present settlements has already been given in the district notice, as well as that relating to rent-rates and other subjects connected with the economical history of the tract. Here, as in Hápur, the drainage channels cut off the parganah from canal irrigation. At the time of settlement the area irrigated from canals was only 719 acres, while wells watered 15,328 acres and tanks 681 acres. The water is throughout at no great depth from the surface, and the soil, except in the sandy tracts, is firm enough to admit of wells being sunk: and that this has been taken advantage of is shown by the fact that irrigation has increased from 9,766 acres to 16,728 acres in thirty years. The population, both landowners and cultivators, are chiefly Tagas, there being only fourteen villages in which they have no footing. They are not an industrious class; still, owing to the lightness of the assessment, no balances occurred during the currency of the last settlement, and in only one unimportant village was a remission of revenue necessary on account of the drought of 1860-61. The transfers of all kinds have amounted to 32 per cent. of the total area, but these are not excessive when the character of the mass of the cultivating community is considered.

The following statement compares the former and present assessments in this parganah:—

Period of settlement.	Total area.	Barren and revenue-free.	Cultivable.	CULTIVATED.			Total assessable.	Land-revenue.	Revenue-rate on cultivated area.
				Wet.	Dry.	Total.			
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Rs.	Rs. a. p.
Former, ...	48,367	7,509	11,035	9,766	20,057	29,823	40,858	52,152	1 12 2
Present, ...	48,860	4,990	7,756	16,728	19,386	36,114	43,870	60,850	1 10 11

According to the census of 1872 there were 50 inhabited villages in this parganah, of which 13 had a population under 200; 14 had between 200 and 500; 14 had between 500 and 1,000; five had between 1,000 and 2,000; one had between 2,000 and 3,000, and three had more than 3,000. The land-revenue from all sources during the same year amounted to Rs. 60,905 (or with cesses Rs. 67,201), which fell on

Population.

the total area at Re. 1-3-11 per acre, on the area assessed to Government revenue at Re. 1-4-7 per acre, and on the cultivated area at Re. 1-11-0. The total population in 1872 numbered 37,255 souls (17,853 females), giving 490 to the square mile. Classified according to religion there were 27,077 Hindus, of whom 12,817 were females, and 10,178 Musalmáns, amongst whom 5,936 were females. Distributing the Hindu population amongst the four great classes, the census shows 3,176 Brahmans, of whom 1,536 were females; 745 Rajpúts, including 341 females; 1,039 Baniyas (474 females); whilst the great mass of the population is included in "the other castes" of the census returns, which show a total of 22,117 souls, of whom 10,466 are females. The principal Brahman subdivisions found in this parganah are the Gaur (2,764), Sarasút (37), Bhát (115), Dakant and Acháraj (129). The Rajpúts belong to the Tonwár (561), Chauháñ (25), and Panwár clans, and the Baniyas to the Agarwál (1,028) subdivision. Amongst the other castes the following show more than one thousand members each:—Taga (5,251), Ját (1,004), Chamár (8,559), Bhangi (1,324), and Gújar (2,086). The following have less than one thousand persons in each:—Máli, Jogi, Koli, Garariya, Kahár, Hajjúm, Barhai, Sonár, Kumhár, Bharbhúnja, Dhúna, Gosháin, Bairági, Khattri, Chhípi, Kalál, Lodha, Khatik, Teli and Baheliya. The Musalmáns are classified as Shaikhs (8,256), Patháns (223), Sayyids (161), and Mughals (46): the remainder are unspecified.

The occupations of the people, as shown by the census of 1872, give 322 male adults employed in professional occupations; 1,217 Occupations. in domestic service; 593 in commerce; 5,868 in agriculture; 1,697 in the mechanical arts and manufactures; 1,784 were returned as labourers, and 321 had no specified occupation. The total population during the same year was divided into landowners, who numbered 4,945; cultivators 11,841, and persons pursuing avocations unconnected with the cultivation of the soil, 20,469 souls. The educational statistics show only 852 males as able to read and write out of a population numbering 19,402 males. These figures must be rejected as untrustworthy. Saráwa contained the tappas of Bhojpur, Kharkoda, Kithor, and Ajrára in the *dastúr* of Meerut and *chakla* of Sikandarabad. In 1809, Ajrára, Saráwa, Bhojpur, and Jalálabad formed one tahsíl which, in 1819, was transferred to Hápur with Garhmuktesar. One village was added in 1853.

SARDHANA, the chief town of the parganah and tahsíl of the same name in the Meerut district, is situated about twelve miles from Meerut. The population in 1847 was returned at 12,481, in 1853 at 13,760, and in 1865 at 13,072. The census of 1872 shows only 12,466 inhabitants, of whom 6,471 were Hindus (2,994 females); 5,641 were Musalmáns (2,817 females), and 354 were Christians (147 females). The difference between the enumeration of 1865 and 1872 is chiefly due to the non-inclusion of outlying hamlets in the town

census, and its decay since the death of Begam Sumru. The site has an area of 168 square acres, giving 74 souls to the acre. Distributing the population amongst the rural and urban classes, the returns show 534 landholders, 605 cultivators, and 11,327 persons pursuing occupations unconnected with agriculture. The number of enclosures in 1872 was 1,686, of which 852 were occupied by Musalmáns and 29 by Christians. The number of houses during the same year was 2,991, of which 623 were built with skilled labour, and of these 116 were occupied by Musalmáns and 13 by Christians. Of the 2,368 mud huts in the town, 1,145 were owned by Musalmáns and 71 by Christians. The *chaukidári* returns give 4,144 houses. Taking the male adult population (not less than fifteen years of age), we find the following occupations pursued by more than 40 adult males:—Barbers (95), beggars (71), butchers (109), carpenters (47), cultivators (304), goldsmiths (55), grain-dealers (43), grocers (81), labourers (763), landowners (244), cloth-sellers (89), oil-makers (58), money-lenders (48), potters (53), servants (343), shop-keepers (173), shoemakers (53), sweepers (85), tailors (120), water-carriers (57), and weavers (253). The Saraujis are the principal residents. The family of the Afghán pensioner Ján Fishán Khán also reside here.

The site is low throughout, in a country covered with canal irrigation and abounding in shallow depressions which imperfectly fulfil the duty of drainage lines. To the north is Lashkarganj and the old fort of Begam Sumru, next comes a considerable plain, and then the town itself. There are five *muhallas*, one of which is Lashkarganj, founded by the Begam as the head camp for her troops, for whom the plain between it and the town formed the parade-ground. To the south-east of the town there appear to be the remains of some rude attempts at a fortification. Traces of a low ditch still remain, and the entrance way crosses this ditch by a low embankment, and winds, as if for the purpose of defence, by a tortuous lane to the Begam's *kothí*. From thence it turns, at right angles, westward towards the centre of the town and forms the principal road. This main street, as well as the side lanes, is low, broken and unmade, and exhibits in places the remains of a brick pavement. To the west there are a few good masonry houses, but, as a rule, the shops are poor and many of the houses are partly in ruins. A metalled road joins the town to Lashkarganj, which forms the market-place. Its two principal streets are laid out at right angles to each other, and at the point of intersection is a circular space known as the *chauk*. These roads are as yet unmetalled and are lined by poor looking shops. Altogether the town has a poor and decayed appearance. The depth, from the surface, of the water in wells has risen from twenty feet to ten feet since the introduction of canal irrigation and fevers and spleen enlargement are common. A drainage line has been excavated from the south of the town to Nánú, whence it turns

westward and enters the Hindan at Kalina, a distance of nine miles. A second line of drainage collects to the south-east and enters the Khodára nála, a tributary of the East Káli Nadi, near Bajhera, whilst to the north-east the Alipur line of drainage enters the same nála near Pábli. The evil effects of over-saturation are exaggerated by the existence of excavations both on the plain beyond the town, in the ditch to the south-east of the town and amid the houses on the south, where there is a hollow covering eight bighas of land. Some efforts have recently been made towards levelling these places and cleaning the drainage cut towards the Hindan, and to this object much of the local funds is applied. The town is essentially an agricultural one and has little or no trade. A market is held in Lashkarganj every Friday.

The Chaukidári Act is in force in Sardhana, and in 1873 supported a village police numbering 44 men of all grades at an annual cost of Rs. 2,676. This is met from a house-tax which in 1872-73 yielded a revenue of Rs. 5,991, fall-

Local institutions. ing at Re. 0-6-2 per head of the population and Rs. 1-13-2 per house assessed (2,590). The expenditure

during the same year was Rs. 5,887 which was met from the income and a balance of Rs. 2,074 from the previous year. The tahsíl building is square and fairly kept, and within it are the police-station and post-office. Close to it is a Christian village and within the town are schools. The old fort of the Begam in Lashkarganj is in ruins, and within it presents the appearance of a mud-built village with interstices of cultivation which are gradually encroaching upon the entire area. The Begam's residence or *kothi* on the east side of the town. It is a fine modern house with a grand flight of steps at the entrance and extensive grounds. It is well kept and in good repair and well furnished, containing some fairly executed pictures. It was built in 1834 and is commonly known as the *kothi* Dilkusha. The Roman Catholic Cathedral, built in 1822, and St. John's College are both outside the town on the south. The former is a rather imposing building standing within a remarkably large enclosure surrounded by a fine ornamental wall. The college is a low masonry house which was once the Begam's own place of residence. The college is intended for the instruction of native priests and is supported from an endowment made by the Begam. The Sarangis have four temples; two of which, known as Lálji Rám ke and the Chakrawála, are fine buildings. Local tradition assigns the founding of Sardhana to one Raja Sarkat. His family ruled until the arrival of the Musalmáns, when all of them were expelled. After a time the place became the property of Dhusar and Bishnoi Mahájans, who, in their turn, were expelled by Tagas during the troubles of the last century. These latter continue still in possession. The ruins of another building of the Begam still exist at Khirwa Jalápur.

SARDHANA, a parganah in tahsíl Sardhana of the Meerut district, is bounded on the north by the Muzaffarnagar district; on the south and east by parganah

Meerut, and on the west by parganah Barnāwa. Sardhana is also the headquarters of the tahsil of the same name. In 1872 the area comprised 137 square miles and 251 acres, of which 105 square miles and 443 acres were cultivated. Of the area assessed to Government revenue, 105 square miles and 400 acres were cultivated, 11 square miles and 408 acres were culturable, and 20 square miles and 40 acres were barren.

The West Káli and Hindan rivers unite below the village of Pitlokar in this parganah. The soil is of excellent quality, consisting of a deep dark loam, producing fine crops of the best kind. To the north and east there is a sand ridge which, entering at Sardhana, proceeds in a south-easterly direction to Khirwa, and on the north-west corner adjoining the Káli are a few bad villages showing much raviny land in their areas. The Hindan *khádir*, though inclined to sand, is fertile and yields good crops. Water is close to the surface and *kuchcha* wells are generally easily made and last several years; but the canal while supplying much of the water has had the effect of destroying and supplanting the well-irrigation, which was always a characteristic of this tract. Mr. Porter thinks that the advantages derived from the canals are more than balanced by the injury caused to the wells and the uncertainty of the water-supply; so that on the whole, with the exception of the tracts to the north and east, the parganah has gained little from the canal. In some cases, particular villages have sustained considerable loss from the obstruction to the natural drainage caused by the canal embankments and some of the distributary channels. It is, however, right to observe that measures have been taken to remedy this evil by the excavation of drainage cuts and the clearing and realignment of the existing lines. Irrigation has increased from 35·9 per cent. of the cultivated area to 62·4 per cent., whilst cultivation has also increased by 29·2 per cent. The irrigation from wells amounts to 19,496 acres; from canals 20,914 acres, and from tanks 979 acres: whilst 8,687 acres still await the plough, of which 3,147 acres are situated in the Hindan *khádir*.

The past and present fiscal history and other matters relating to the economical history of this tract have been given in the district notice, but here it will be well to give some account of the state of the Sumru parganahs as a whole, and their first settlement. The portions of the Sumru

The Sumru estates. estates included in the Meerut district on its lapse in 1835, comprised parganahs Sardhana, Budhána, Baraut, Kutána and Barnāwa, and two other villages. Of these, parganah Budhána was subsequently transferred to the Muzaffarnagar district. The net demand of all these parganahs for twenty years (1814—1834 A.D.) averaged Rs. 5,86,650, including cesses, while the collections during the same period averaged Rs. 5,67,211 with balances, amounting on the whole to only Rs. 19,439. The mode of settlement adopted by the

Begam was that calculated to extract the very last anna that a cultivator could pay. The village rent-rolls were framed on money rates for produce graduated to the caste of the cultivators, of whom the Jāts held the first rank. As compared with the neighbouring British district of Meerut, the rates per *pukka* bigha for sugarcane ranged from Rs. 6-9 to Rs. 9 as the lowest, to from Rs. 10 to Rs. 15 as the highest, while in Meerut they were Rs. 3 to Rs. 4½ for the lowest, and Rs. 9 to Rs. 12 for the highest. An allowance of from 2½ to 12 per cent. was made as *nankār*, but to the regular revenue were added cesses (*abwāb*), one of which was fluctuating according to the amount of the land-revenue, on which it amounted to seven per cent., and the other fixed, intended as a commutation for *bhet*, *nazarāna*, and other presents to tax-collectors, which the Begam professed to reimburse them for. To these items were added balances of *takkāvi* and arrears, all of which together formed the debit side of the accounts of each village to which the collections were credited.¹

In realizing the revenue the *takkāvi* advances were first recovered with interest at 25 per cent. *pūr* annum, then a second deduction at Rs. 7-5 per cent. was made for *batta* or loss in exchange on inferior rupees, which was continued, even when full-weight rupees were current. Taking the average rent-roll for 20 years at Rs. 5,49,847 the sum of Rs. 34,744 was allowed as *nankār*, leaving Rs. 5,15,103, to which must be added Rs. 34,054 as cesses making a total demand of Rs. 5,49,157. The collections amounted to Rs. 5,29,718, or with *batta* Rs. 5,67,211. That there was such a small arrear as Rs. 19,439 through such a long series of years is due to the fact that sugarcane, the principal crop, was grown on a system of *takkāvi* or advances. These the cultivator was forced to accept, and the collectors inspected the villages each year, and obliged each one to till as much land as his means would allow. Lamberdārs, or head-men of villages, were also allowed to levy a fee amounting to twelve per cent. on the revenue. In good villages sugarcane land was rated in the village *bāchh* at Rs. 18 the *pukka* bigha, and many villages paid as high as ten rupees per acre on the cultivated area, so that many villages were obliged to eke out their revenue by taxing trades, hiring carts and the like. In fact the cultivators were only left sufficient to keep body and soul together. Mr. Plowden writes:—"The rule seems to have been fully recognized and acted up to by the Begam which declared that, according to Muhammadan law 'there shall be left for every man who cultivates his lands as much as he requires for his own support, till the next crop be reaped, and that of his family and for seed. This much shall be left to him; what remains is land-tax and shall go to the public treasury.' For considering her territory as a private estate and her subjects as serfs, she appropriated the whole produce of their labour, with the exception of what sufficed to keep body and soul together.

¹ From Mr. T. C. Plowden's Report, Set. Rep., I, 230.

It was by these means, and by nicely keeping the balance, and always limiting her demand to the exact point of endurance, and with equally due regard to favourable or unfavourable seasons, that a factitious state of prosperity was induced and maintained, which though it might, and I believe did, deceive the Begam's neighbours into an impression that her country was highly prosperous, could not delude the population into content and happiness. Above the surface and to the eye all was smiling and prosperous, but within was rottenness and misery. Under these circumstances the smallness of the above arrear is no proof of the fairness of the revenue. It rather shows that the collections were as much as the Begam's ingenuity could extract, and this balance being unrealizable, the demand was by so much at least too high." As long as the Begam retained possession of her energy and strength, this system, the product of her own tact and shrewdness, flourished. But when her heir attempted to meddle in the administration, during the last few years of her life, the fictitious nature of the prosperity of her estates became apparent. He abandoned the old system and its advances and made a settlement for three years. Adopting the old demand *plus* cesses, he allowed only a set-off of five per cent. and attempted to collect the rest as regular revenue. The net revenue of this settlement for 1243 *fasli* was Rs. 6,91,388, exclusive of 35 villages held *khám*. This resulted in an increase of a lakh of rupees in the demand, while no assistance was rendered in bad seasons or when untoward circumstances affected the cultivator. The result may be easily imagined: in the first year of the lease 92 villages fell under direct management, in the second six, and in the third 28 more villages, amounting to one-third of the whole estate. Ruin was impending, when the Begam's death, in January, 1836, and the consequent lapse of the estate to the British, induced the cultivators to return to their homes.

Mr. T. C. Plowden was appointed to settle the parganahs. A summary settlement, at a uniform reduction of nineteen per cent. on the lease, was first made to allow of preparations being made for a regular settlement. Mr. Plowden apparently put aside the Begam's collections, and found Rs. 5,44,000 a fair sum for the Government demand, which he distributed over the parganahs and then on each village. This work, from the absence of all data that could be relied upon, was not very satisfactorily performed. For we find from Mr. Forbes' report that the most startling inequalities in assessment were perpetrated. Some estates paid less than one-third of their net assets as land-revenue, whilst others had only cultivating profits left them. These inequalities were most glaring in every parganah in the case of the Ját proprietors, who seem to have been ground down to the utmost. The cause for this is not difficult to discover. The Begam's *diwán* was a Taga, between whose clansmen and the Játs there has ever been the bitterest enmity. The feud was heightened by the murder of the

Taga diwán of Bamnauli in Barnáwa by the Játs of the neighbouring villages. "In this way," writes Mr. Forbes, "by placing the slightest dependence upon an average of collections the injustice which springs from old party-fouds has been continued up to the present time." It has been one of the principal objects of the framers of the new settlements to correct these inequalities, which, however, have become so stereotyped as to be incapable of removal at once. The reduction in the assessment of over-taxed estates has been accomplished, but it has not been possible all at once to raise the demand on the Taga villages to the full quota which the State has a right to demand. However, the relief from cesses and miscellaneous dues and other exactions effected by Mr. Plowden was sufficient to give the Játs new life. Their industry was redoubled, and not only did they occupy fully their own villages, but swarmed out into those around, forming the most valuable tenantry of those landowners who were too proud to cultivate their own estates or were unable to manage them.

In the Sardhana parganah Mr. Plowden's assessment has been lowered in nine villages. In one Ját village alone (Chhúr) it has been found necessary to remit Rs. 3,100. Still the land-revenue all round has been raised by Rs. 13,466, or 8·5 per cent., though the rate on cultivation has fallen from Rs. 3-2 to Rs. 2-9-3 per acre, owing to the increase in the cultivated area. Only 12,738 acres, or 14 per cent. of the total area have changed hands, exclusive of two *pattis* confiscated for rebellion. Rajpúts, sold or mortgaged 3,998 acres, Játs 1,228, and Tagas 1,456 acres, while Baniyas have bought up 2,996 acres or nearly one-fourth of the whole. The prevailing tenure is *bháyachúra*. Rajpúts hold nearly half the parganah, next (in the south-west) Játs, and next Tagas. Patháns own three villages; Bilúches, two; Gújars, one; Ráwas, one; Sayyids, one; and Mewátis, one. Sardhana is now a flourishing parganah; sugarcane occupies 14 per cent. of the cultivated area, cotton 10 per cent. and wheat 33 per cent. The cane cultivation is, perhaps, the best in the district owing to the land being left fallow for one harvest before it is planted.

The following statement compares the statistics of Mr. Plowden's and Mr. Forbes' settlements:—

Period of settlement.	Total area.	Barren and revenue-free.	Cultivable.	CULTIVATED.			Total assessable.	Land-revenue.	Revenue-rates on cultivated area.
				Wet.	Dry.	Total.			
	Aeres.	Aeres.	Aeres.	Aeres.	Aeres.	Aeres.	Aeres.	Rs.	Rs. a. p.
Former, ...	87,656	16,767	19,532	18,443	32,914	51,357	70,899	1,57,714	3 9 3
Present, { Khádír, ...	8,702	1,206	3,147	817	3,532	4,349	7,496	1,71,180	2 9 3
{ Bángar, ...	79,229	11,677	5,541	40,572	21,439	62,011	67,552		

According to the census of 1872, parganah Sardhana contained 61 inhabited villages, of which 4 had less than 200 inhabitants; 19 had between 200 and 500; 15 had between 500 and 1,000; 16 had between 1,000 and 2,000; 5 had between 2,000 and 3,000; and one had between 3,000 and 5,000. The only town containing more than 5,000 inhabitants is Sardhana with 12,466 inhabitants.

The total population in 1872 numbered 82,401 souls (37,740 females), giving 601 to the square mile. Classified according to religion, there were 60,530 Hindus, of whom 27,482 were females; 21,516 Musalmáns, amongst whom 10,111 were females; and 354 Christians. Distributing the Hindu population amongst the four great classes, the census shows 6,304 Brahmans, of whom 2,857 were females; 8,282 Rajpúts, including 3,382 females; 6,092 Baniyas (2,776 females); whilst the great mass of the population is included in "the other castes" of the census returns, which show a total of 39,853 souls, of whom 18,467 are females. The principal Brahman subdivisions found in this parganah are the Gaur (3,278), Sarasút (131), Bhút (281), Dakaut (159), Gujrátí, Chaurasiya and Gautam. The Rajpúts belong to the Chauhan (646), Tonwár (51), Kachhwáha, Bhát and Sombansi clans and the Baniyas to the Agarwál (1,002), Sarangi (3,637), Gadariya (1,096), Bishni (123), and Raja-ke-barádari subdivisions. Amongst the other castes the following have more than one thousand members each:—Taga (3,424), Kahár (3,606), Hajjúm (1,194), Ját (6,707), Kumbár (2,132), Chamár (9,748), Bhangí (3,156), and Jalúha (1,251). The following have less than one thousand members:—Máli, Jogi, Koli, Garariya, Sonár, Lohár, Barhai, Bharbhúnja, Gújar, Gosháin, Ahír, Bairági, Chhípi, Kalál, Dhobi, Lodha, Khatík, Saisi, Dhanak, Darzi, Kanjar, Saini, and Mína. The Musalmáns comprise Shaikhs (9,866), Patháns (1,549), Sayyids (457), and Mughals (139); the remainder are unspecified.

The occupations of the people are shown in the statistics collected at the census of 1872. From these it appears that of the male adult population (not less than fifteen years of age), 622 are employed in professional avocations, such as Government servants, priests, doctors, and the like; 3,783 in domestic service, as personal servants, water-carriers, barbers, sweepers, washermen, &c.; 1,365 in commerce, in buying, selling, keeping or lending money or goods, or the conveyance of men, animals, or goods; 11,743 in agricultural operations; 6,199 in industrial occupations, arts and mechanics, and the preparation of all classes of substances, vegetable, mineral, and animal. There were 3,913 persons returned as labourers and 764 as of no specified occupation. Taking the total population, irrespective of age or sex, the same returns give 23,878 as landholders, 8,223 as

cultivators, and 50,300 as engaged in occupations unconnected with agriculture. The educational statistics, which are confessedly imperfect, show 1,678 males as able to read and write out of a total male population numbering 41,661 souls. In 1852 there were 80 estates in Sardhana comprising 78,680 acres. Two estates were added in 1853, making an area then of 87,532 acres.

SARDHANA, a tahsíl of the Meerut district, comprises parganahs Sardhana and Barnáwa. The total area, according to the census of 1872, then contained 251 square miles and 45 acres, of which 184 square miles and 215 acres were cultivated. The area assessed to Government revenue amounted to 251 square miles and two acres, of which 184 square miles and 172 acres were cultivated, 23 square miles and 299 acres were culturable, and 43 square miles and 171 acres were barren. The land-revenue for the same year stood at Rs. 3,00,438 (or with cesses Rs. 3,30,511), falling on the total area at Re. 1-13-11 per acre, on the area assessed to Government revenue at Rs. 1-13-11 per acre, and on the cultivated acre at Rs. 2-8-9. The total population numbered 147,398 souls (67,843 females), giving 587 to the square mile, distributed among 128 villages. The same statistics show 7 persons insane, 3 idiots, 10 deaf and dumb, 207 blind, and 23 lepers in the tahsíl. All other matters pertaining to the history of the tahsíl will be found under the district notice or separately under each parganah.

SARZAPUR, a village in parganah Hastinápur of the Máwána tahsíl, is distant 27·5 miles from Meerut. The population in 1872 was only 261. It has a second-class police-station.

SHAHDARA, a town in parganah Loni and tahsíl Gháziabad of the Meerut district, is situated near the left bank of the East Jumna canal, about 31 miles from Meerut. In 1865 the population was 7,227, and in 1872 was 7,257, of whom 5,683 were Hindús (2,686 females) and 1,574 were Musalmáns (767 females). It lies within the area of village Chandawali. This place was founded by Shah Jahán and named Shahdara or (royal gate) by him. His object was to make Shahdara an emporium for the supply of grain to his troops. The muhallah Dalhai was destroyed by Suraj Mal, Ját, of Bhartpur (Bhurl-pore), and just before the battle of Pá nipat the town itself was plundered by the soldiers of Ahmad Sháh Duráni. The *dál* of Dalhai is much celebrated in the neighbourhood, and the sweetmeats of Shahdara are much esteemed. The most important inhabitants are Mahájans and Brahmans. A large trade in shoes, leather, and sugar-refining is carried on. There is a first-class police-station and an imperial post-office. Shahdara has a municipality whose affairs are managed by a committee, of whom three are official and six are elected by the tax-payers. The income is derived from an octroi tax, which in 1872-73 fell at Re. 1-0-5 per head of the population. The following statements show the income of the municipality for four years and the character of

imports for two years. The grain duty has been abolished and a tax on carts laden with grain has been substituted for it:—

Receipts.	1871-72.	1872-73.	1873-74.	1874-75.	Expenditure.	1871-72.	1872-73.	1873-74.	1874-75.
	Rs.	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	Rs.
Opening balance, ...	3,795	9,623	5,623	2,544	Collection, ...	1,230	1,448	1,260	777
Class I.—Food and drink, ...	16,744	5,378	1,411	517	Head-office, ...	250	232	35	60
" II.—Animals for slaughter, ...	161	180	150	186	Original works, ...	758	2,960	2,589	1,784
" III.—Fuel, &c., ...	115	251	181	145	Compensation, ...	1,050	2,408	48	147
" IV.—Building materials, ...	84	82	103	99	Repairs, &c., ...	743	1,950	90	9
" V.—Drugs, spices, ...	17	24	33	21	Police, ...	2,180	1,842	1,776	1,750
" VI.—Tobacco, ...	42	24	35	18	Education, ...	...	292	385	215
" VII.—Textile fabrics, ...	199	534	308	223	Conservancy, ...	231	374	420	420
" VIII.—Metals, ...	7	7	5	6	Charitable grants, ...	20	595	380	140
Total octroi, ...	11,300	6,530	2,226	1,215	Road watering, ...	257	238	208	12
Tolls on carts and carriages, ...	...	963	1,237	1,300	Miscellaneous, ...	25	97	94	148
Rents, ...	59	108	52	65					
Fines, ...	83	...	34	23					
Pouafs, ...	91	151	89	127					
Miscellaneous, ...	1,069	726	581	570					
Extraordinary, ...	4	43	16	...					
Total, ...	10,373	18,137	9,857	5,910	Total, ...	8,750	12,613	7,314	5,474

Statement showing import of taxable articles for two years into Shahdara.

Articles.	Net imports in				Consumption per head in			
	1873-74.		1874-75.		1873-74.		1874-75.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Mds.	Rs.	Mds.	Rs.	Mds. s. c.	Rs. a. p.	Mds. s. c.	Rs. a. p.
Sugar, unrefined, ...	47,552	1,75,767	3,899	13,930	6 22 1	...	0 21 5	...
Ghi, ...	535	11,242	486	2,525	0 2 15	...	0 2 10	...
Other articles of food, ...	2,157 loads	1,718	1,809 loads	2,502	...	...	...	...
Oil and oil-seeds, ...	5,058	9,954	4,648	7,386	0 27 14	...	0 25 9	1 0 6
Fuel, &c., ...	...	1,641	...	1,599	...	0 3 7	...	0 3 6
Building materials, ...	...	3,344	...	3,233	...	0 7 4	...	0 7 1
Drugs and spices, ...	897	2,115	511	1,351	0 4 15	...	0 2 13	...
Tobacco, ...	618	1,110	335	572	0 3 6½	...	0 1 13	...
European and native cloth, ...	...	11,109	...	10,576	...	1 8 4	...	1 7 3
Native shoes, ...	...	9,055	...	10,667	...	1 4 0	...	1 7 4
Metals, ...	...	388	42	382	...	0 0 9	...	0 0 10

The duty on grain was abolished and a toll on carts laden with grain was substituted in 1873-74. The sugar imports were only for nineteen days in 1874-75; loads are in addition to the value of other articles of food; the tax on animals was let out on contract.

SHÁHJAHANPUR, a large village in parganah Kithor and tahsil Mawána of the Meerut district, is distant 17 miles from Meerut and about one mile eastward of Kithor on the Meerut and Garhmuktosar metalled road. The population in 1865 was 3,350 and in 1872 was 3,586, consisting principally of Patháns, Náís, Chamárs, and Mihtars. The site is fairly level and lies on each side of the Meerut road. Between the southern portion and the Meerut road is a large

irregular excavation full of water which serves for the reception of the drainage from the country round. To the west of this is a small bazar of poor mud huts where a market is held on Saturdays. In the town itself there are five large havelis bordered by brick walls, around which the mud-built houses of the people cluster without any apparent arrangement. Sháhjahánpur is a purely agricultural village, inhabited by cultivators and landowners. There is a Government school and a small Musalmán school, where pupils are taught to read the Korán. The water in the wells has risen from 23 feet to 15 feet from the surface since the introduction of the Anúpsahr branch of the Ganges canal, and is not so sweet as it used to be. Fever and spleen diseases are common, and of late years very prevalent. Sháhjahánpur was founded in the reign of the Emperor Sháhjahán by one Núr Khán, Pathán, who obtained a grant of land in the vicinity. There is a post-office and an encamping-ground for troops here. Water is abundant, but supplies can only be had after notice.

SHAMSHER in parganah Jalálabad and tahsíl Gháziabad of the Meerut district, 23 miles from Meerut, was formerly a celebrated village. The inhabitants were Káyaths in the service of the Hindu kings of Dehli. It is said that the place was so wealthy that it contained no less than 52 possessors of elephants. Shaháb-ud-dín and Ala-ud-dín ravaged the place, and the Káyaths fled never to return again till the time of Sháh Alam. There are now a few Káyath families, and a considerable number of cultivators have settled here under them. The population in 1872 numbered only 250 souls.

SÚRIRPUR, or Sarúrpur, a large village in parganah Kutána and tahsíl Bágpát of the Meerut district, is distant, 28½ miles from Meerut. Súrirpur first appears with more than 5,000 inhabitants in the census returns of 1872, when the numbers were 5,216, of whom 4,849 were Hindús (2,226 females) and 367 were Musalmáns (167 females). The inhabitants are for the most part Játs and Hindu Rajpúts.

TIKRI, a large village or town in parganah Barnáwa of the Meerut district, is distant 27 miles from Meerut. In 1847 the population was returned at 9,882 souls; in 1853 it is not mentioned, and in 1865 the numbers were 5,631. In 1872 there were 5,698 inhabitants, of whom 4,989 were Hindús (2,277 females) and 709 were Musalmáns (339 females). There are five *pattis* or subdivisions in the village, all of which were formerly held by co-parceners, but partition has of late years been going on to a great extent. A Ját, by name, Thernis said to have founded this flourishing agricultural village, and the present occupants are his descendants. Tikri is one of the villages from which the portion of Barnáwa lying to the north of the Karsuni Nádi is called 'Chaugan,' or 'the tract of the four villages.' The other villages are Nirpura, Dáha, and Doghat. The land in the neighbourhood is somewhat sandy, owing to the presence of a depression in the general level of the country, which serves as a drainage channel for this portion of Barnáwa. The *pattis* of Tikri are Ratnára, Dabra, Menawára, Dhamara, Chhajyána, and Bhojyára.

